Products Finishing

CLEANING
PLATING
POLISHING
FINISHING

OCTOBER • • • 1947

The Steinway That Went A-Swimming!

What happened to Steinway & Sons' Grand Piano No. 320,490 just shouldn't happen .. well, even to a pup. While being loaded onto a steamer, the piano gave its handlers the slip and landed in New York's East River. After fishing the piano out of the river the shippers returned it to the Steinway plant for inspection. Though its ivory keys and metal parts were sadly in need of replacement, Steinway technicians were more than pleased to find that the wood case, protected by "A Murphy Wood Finish", was still in good condition.

Steinway & Sons, whose pianos are known the world over for tops in quality, can tell many such tales about how their beautifully finished pianos have stood up under rough usage. For Steinway has been "A Murphy Wood Finish" user as far back as any of the present Steinway staff can remember. Why not give your product the same beauty and durability as this outstanding piano. Interchemical technicians stand ready to formulate a finish which will meet the use and abuse that your product must withstand. Write Interchemical Corporation, Finishes Division, 350 Fifth Avenue, New York 1, N. Y.

Murphy Wood Finishes

AN INTERCHEMICAL PRODUCT

E. Eng.
Pt.
Products Finishing

FRED W. VOGEL, Editor

ROBERT I. SHORE
Associate Editor

Consulting and Contributing Editors
H. LEROY BEAVER
ALLEN G. GRAY

GENE J. SCHWARBER
Advertising Manager

JESSE R. HARLAN
Manager Sales Promotion

NORMAN S. ROGERS
Art Director

RICHARD S. KLINE
GEORGE E. HAY
431 Main St., Cincinnati 2
MAin 0182

G. M. FILLMORE
342 Madison Ave.
New York 17
Murray Hill 6-3899

JOHN M. KRINGS
Tribune Tower, Chicago 11
Delaware 5441

CHARLES H. DEILY, JR.
351 Mattison Avenue
Ambler, Pa.
Ambler 0339

MEMBER

CCA

Published monthly and copyrighted (1947) by
GARDNER PUBLICATIONS, INC.
431 Main St., Cincinnati 2, Ohio

Howard Campbell .....*President*
John M. Krings.....*Vice President*
Granville M. Fillmore..*Vice President*
Margaret L. Gardner.....*Secretary*
Richard S. Kline.....*Treasurer*

Printed in U. S. A.

Products finishing

Contents

Volume 12 OCTOBER, 1947 Number 1

Editorial 19

8-Step Plan for Choosing Best Colors for Your Plant..... 20
By James A. Meacham

Barrel Finishing of Metal Products
By H. Leroy Beaver
Part 14—The Phenomena Termed "Ball Pattern"..... ...36

Chrysler Corporation's Paint Methods Department..... 52
By Bryant W. Pocock

Finishing Clinic
By Dr. Allen G. Gray
— Factors in the Selection of Protective Coatings..... 70
— Use of Limestone Beds to Neutralize Waste from Acid Dipping and Pickling Operations..... 78
— Activated Carbon Purification of Plating Solutions..... 80
— Quality Plating Demands Consideration of Metal Distribution Factors 86
— Surface Active Agents May Improve Efficiency of Alkaline Cleaning and Acid Etching..... 90
— Aluminum Surface Preparation for Organic Finishing.. 92

News of the Industry..... 98

Finishes That Aid in Appearance and Utility.....110

New Equipment and Materials 112

Opportunity Section 130

The Finishing Touch 132

Catalog Library 134

Index to Advertisements 136

Only Binks can supply you with th

complete line of better finishing equipment

EVERYTHING YOU NEED FOR COMPLETE SPRAY FINISHING *FROM ONE SOURCE*

Take a tip from large users of industrial paint spraying equipment and buy *all* your finishing equipment from Binks. The advantages are many:

- You receive the finest equipment made...equipment that has proved itself over and over again under severest working conditions.
- Your finishing department will be integrated. Every Binks product is designed to work smoothly and efficiently with every other Binks product.
- Both your purchasing and maintenance are greatly simplified when you turn to one source for everything you need.
- You have the benefit of a finishing department correctly engineered for your particular product, finish and speed of production. Binks engineers have designed and installed finishing departments for most of America's leading industries . . . where quality finishes must be applied at production-line speeds.

Call in a Binks engineer now and let him show you, without obligation, how you can make your finishing department more efficient by standardizing on Binks products *all the way through*.

Products Finishing

Electroplating Engineering

The last decade has seen a large increase in the application of engineering principles to electroplating problems. So long as the electroplating industry, and especially the average unit, was small, little opportunity existed for engineering, except that based on common-sense and experience. However, with the advent of large plating installations and new procedures, there was a demand, which is being met, for the more intelligent selection of materials of construction and for more efficient electrical and mechanical devices, including large automatic type equipment.

The growth in the electroplating industry, the constant reduction in the cost of handling materials through the cleaning and plating room, and the ever-widening field for conveying application have been brought about, largely, by the rapid strides made in the development of the automatic type of equipment. Properly engineered automatic plating conveyors are built on the principle of simplicity of design and ability to transport a wide varety of articles through a predetermined cycle of treatments, automatically, in a short period of time, consistent with the nature of the work to be done, and by so doing reduce the cost of handling through the treatments.

The automatic method of plating increases production by virtue of the fact that the flow of work is constant and systematic throughout the productive period. This enables the production manager to more accurately plan his daily output in advance with assurance of fulfillment of the schedule. Properly engineered automatic plating installations usually require a minimum of floor space, as well as minimum solution per pound of work plated. In addition, a minimum of labor is required to operate automatic conveyorized plating equipment that has been properly engineered.

As a result of constant engineering research, many new features are becoming available in electroplating equipment. The electroplater and manufacturer of metal products can best look to a reputable supplier of equipment for expert engineering advice and service to ensure the selection and installation of equipment properly engineered from every standpoint and geared to lowest day-by-day production cost.

8-Step Plan for Choosing Best Colors for Your Plant

By JAMES A. MEACHAM
General Manager, Sherwin-Williams Maintenance Sales

NEVER underestimate the power of color in stimulating industrial efficiency and improving a score of other plant factors. Color's role in industry is moving to a new high as color engineers learn more and more about its hidden powers. During the war years, many industrialists adopted planned color schemes in their plants with remarkable success. They reported efficiency up, eyestrain down, morale improved, and accidents reduced to a minimum.

At one southern plant that makes pipe fittings, a time study showed that workers' output began to fall off about 10:30 in the morning and 3:30 in the afternoon. After the plant had been refinished in color, it was found that production did not begin to slump until 11 a. m. and 4 p. m. Thus, the manufacturer gained an extra hour per day of maximum worker output.

Kept Workers at Plant

In another instance, a large eastern manufacturer was confronted with a labor supply problem. In a city where one of his plants was located, there were two other companies engaged in the same type of production, all competing for the limited supply of labor. The two competitive concerns were in brand new plants, whereas his plant still occupied a building designed to meet the requirements of a previous period when employee welfare was not a prime consideration. Since all three firms paid the same hourly rates, the manufacturer was unable to hold his labor supply. His only alternative was to create an attractive atmosphere in his own plant through the use of paint. This he did with the result that his workers stayed, his plant efficiency went up, and his personnel problem completely disappeared.

Another concern reported a decrease of 40 per cent in personal injuries after a modern color job was done. Simply through the improvement of illumination, color made the plant safer. Engineers from Westinghouse Electric say their philosophy is to make "every hazard visible." When dangerous parts are identified with attentive compelling colors, when aisleways are outlined with zone marking lines, when dark passageways and areas are brightened up with light reflecting colors, the safety index of the plant rises noticeably.

Every plant has individual needs

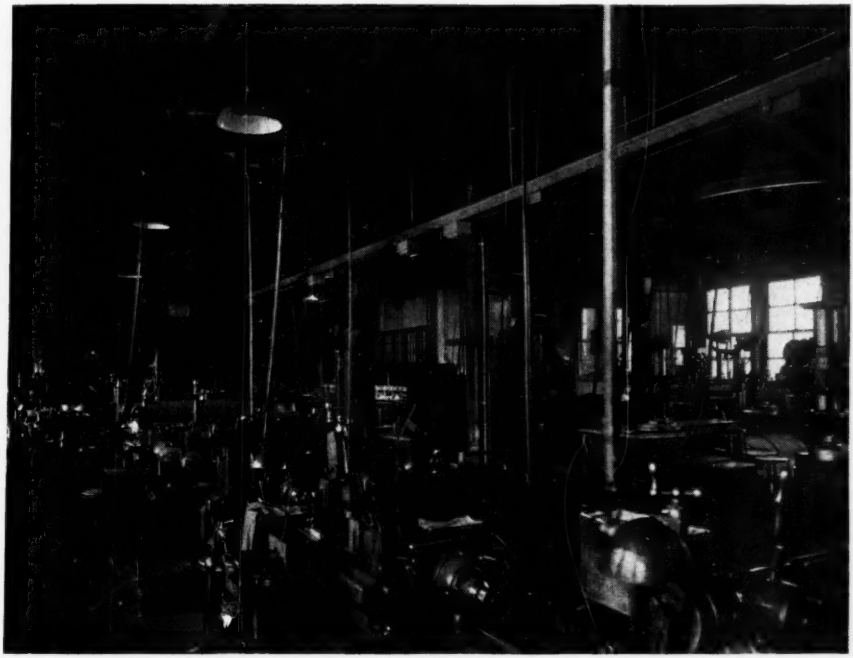
which should be considered carefully when a paint job is planned. To obtain the greatest benefit from a color plan in any plant, the following eight factors should be considered: (1) type of plant, (2) ceiling color, (3) wall colors, (4) glare, (5) lighting, (6) machine colors, (7) related colors for adjoining rooms, and (8) safety colors.

Type of Plant

Each manufacturing plant is a problem in itself and it is a question of judgment which of the basic methods of color usage is best adapted to the situation. Consideration should be given both to the nature of the work performed and to the type of employed personnel. In heavy manufacturing plants where employees are predominantly men, the trend is to make the dominant color green, blue, or brown. In light manufacturing plants where women are employed, more delicate shades of turquoise, peach, and buff are mostly preferred.

Colors should be selected which will be consistent with the general atmosphere of the plant (see Table I). Cool colors are preferred where the interior of the factory is above normal temperature and where sunlight is excessive. Warm colors give better results in poorly lighted areas and departments which receive their light primarily from the North.

Generally, industrial plants may be divided into three groups: mill type,



Before Color Treatment: With ceilings and walls the same color as the floor, the machine shop depicted herein takes on a very dark appearance. Moreover, there is no contrast between working surfaces and surrounding areas, with the result that workers soon tire from eye fatigue and the general gloomy appearance.
(Photo courtesy The Sherwin-Williams Company)

After Color Treatment: Light walls and ceilings provide considerable more light for the working area. The ceiling seems to be higher and thereby relieves the depressing atmosphere. Dark dadoes along traffic and machine aisleways protect walls from dirt and grease.
(Photo courtesy The Sherwin-Williams Company)

multi-story or flat ceiling type, and "forest of posts" type.

1. Mill Type. In these buildings, the ceilings are high—at least in the center bay—with the framing of structural steel truss construction. Due to excessive dirt usually present in this type of mill, color on the ceiling offers very little advantage. A conventional color plan is most suitable employing a white or ivory ceiling, a light tint on the walls, a darker dado (lower part of wall), and, if color contrast is desired, a different color on the machines. In many cases, the dado may be painted the same color as machinery with good results.

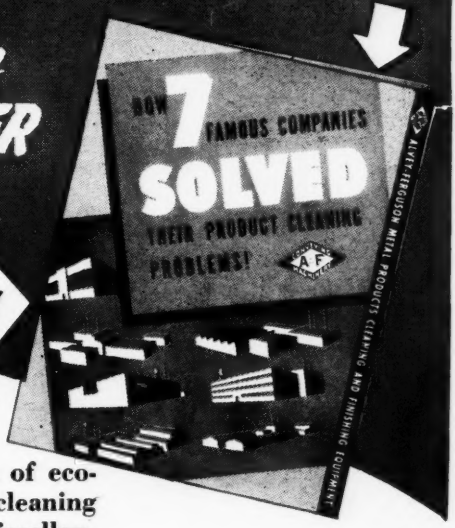
2. Multi-Story or Flat Ceiling Type. Light blue or green ceilings work very well in plants of this type, providing the width of the building does not exceed 60 feet, so that illumination from either side is ample. Where the width is greater than 60 feet, a white or ivory ceiling is usually necessary for good illumination, and the color band system can then be used. If the windows extend clear to the ceiling, the conventional system of white or ivory ceiling, light tinted upper wall, and darker colored dado is preferred.

3. "Forest of Posts" Type. Larger automotive plants with many acres under one roof are examples of this type. They are generally of saw-tooth construction or are equipped with overhead monitors which provide ample light over the entire floor area

7 SOLUTIONS

TO METAL PRODUCTS CLEANING PROBLEMS

described in this NEW FOLDER


HOW 7 FAMOUS COMPANIES SOLVED THEIR PRODUCT CLEANING PROBLEMS!
A-F
ALVEY-FERGUSON METAL PRODUCTS CLEANING AND FINISHING EQUIPMENT

WRITE for Your Free Copy *TODAY!*

IF YOU have the problem of economically and efficiently cleaning and drying small tools or miscellaneous ball bearings or other metal parts or products . . . washing chromic acid off heavy chrome-plated parts . . . removing cyanide from hardened gears . . . removing chips from Diesel motor blocks—you will find many distinct innovations over previous methods in this new folder. Write for your copy, or without obligation, describe *your* particular problem and we will help you solve it.

THE ALVEY-FERGUSON COMPANY

632 Disney St. *Established In 1901* Cincinnati 9, Ohio

Offices In Principal Cities—Coast to Coast

CONVEYING A-F MACHINERY **Alvey-Ferguson**

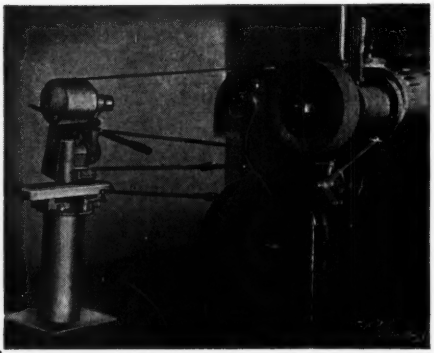
without depending upon light from the side walls. The colored ceiling, or out-of-doors idea, is a good solution in such a plant. A light tint of blue or green on the ceiling not only tends to give the impression of greater height but also tends to avoid excessive glare.

Ceiling and Wall Colors

Color usage in industry resolves itself down to three basic systems. The most important is the conventional wall and dado system. In this type of color usage, the colors are gradually increased in brightness from floor to ceiling. Thus, the floor may be a neutral gray, the dado a dark green, the upper wall a light green, and the ceiling white.

Just the opposite is the "lifting ceiling" or out-of-door arrangement where the ceiling is light blue or green, the walls white or ivory, without dado, and the color contrast obtained by a darker value of the ceiling color on machinery and equipment. This arrangement is greatly enhanced if a pleasing color contrast is introduced on accessories, as, for example, yellow muslin curtains where dark blue is used on the machines. On a recent job, this combination produced a striking effect in a textile department where curtains were regularly used to reduce excessive sunlight.

The third system of color usage may be referred to as the "color band" method. This system is particularly adapted to high ceilings with flat and simple ceiling construction. With this arrangement, the ceiling may be white or ivory; a light tint may be used on the wall above the top of the windows, and either the same tint or dado enamel used below the windows. The pilaster between the windows would be painted white or ivory. The white pilasters, together with the window openings themselves, which are also light, form a continuous band all the



DATA: Easily reversible to R.H. or L.H.; 5" side adjustment on Needle Bearings with Remote Control; Hydraulic Shock Absorber lowers weight slowly; easily tracks ¾" to 6" belts from Remote Control; Large Bearings Mounted in Arm for Lower Bearing Speeds, sealed for life with Non-Friction Grease Seals; Large Belt Length Adjustment; Counter Weighted for Steady Accurate Pressures.

DUAL REMOTE CONTROL*

MAKES THE

NIEDERST

Back Stand Idler

— the most versatile in the field!

***Remote Control for Operation Ease**—idler pulley arm swings on a turret enclosing angular adjustment mechanism. Levers conveniently located on lathe allow control of both angular and wide range of lateral adjustments from operator's normal working position.

A host of other innovations achieved by the NIEDERST BACK STAND POLISHER, have earned it the title of "World's Workingest Idler." For better, faster, smoother abrasive belt polishing — *investigate NIEDERST now!*

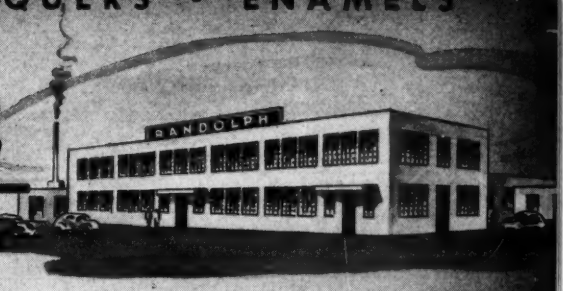
Order from your dealer, or direct.

NIEDERST COMPANY

3506 S. MICHIGAN AVE., CHICAGO 15, ILL.

DOPES • LACQUERS • ENAMELS

Randolph



RODUCTS COMPANY
Carlstadt, New Jersey

Presents

FINE, NEW

STOPPING OFF LACQUERS

for

CHROME BATHS——CR-71

SILVER BATHS——SA-87

GENERAL PURPOSES——AR-45

Prompt Delivery

MAIL COUPON

REQUEST SAMPLE GIVING DETAILS

RANDOLPH PRODUCTS COMPANY
Carlstadt, New Jersey

Gentlemen:

Without cost or obligation to us please send us a sample of Randolph Stopping Off Lacquer for

- ☐ Chrome Baths CR-71
- ☐ Silver Baths SA-87
- ☐ General Purposes AR-45

Details

Firm Name.....

Address.....

per.....

Date.....

TABLE I—HOW TO SELECT COLOR HARMONIES

	Mill Type Plant	Multi-Story or Flat Ceiling Plant	"Forest of Posts" Type Plant
Walls	Light walls, darker dado	Light walls above windows, darker tint below	Light walls, no dado
Ceiling	White or ivory	Light blue, green, ivory or white	Blue or green
Machines	Same brightness as surroundings. Most practicable colors to hide dirt are: brown, medium blue, and silver gray.		
Lighting	All colors should be selected within plant under actual lighting conditions. Fluorescent lighting is cold and calls for warmer hues; incandescent is hot and calls for cooler hues.		
Glare	Sunlight glare is reduced by painting walls in light tints of brown, green and blue. Similarly, light greens and blues on ceilings absorb glare.		
Temperature	Cool colors (greens, blues and browns) are preferable in plants where temperatures are normally high; warm colors (tan and coral) should predominate in cool plants or plants which receive cool northern light.		
Accent colors	Red should be used for danger areas only. Attention-calling yellows or oranges should be used on handles and operating devices to speed manual operations.		

way around the room. If the wall below the windows is painted the same light tint as used above the windows, a base of dado color 8 to 10 inches high may be painted around the room.

In certain types of plants, notably the large area saw-tooth and monitor type factories used for automotive production, adequate daylight is supplied through overhead monitors or saw-tooth type skylights, and the function of the paint on the ceiling is to diffuse and distribute the light evenly over the working area. Narrow factory buildings with abundant window sash on either side are also in this category. Maximum light reflection from the ceiling is not necessary; thus, a colored ceiling may be readily used.

Glare

Many efforts have been made to alleviate glare to cut eyestrain of production workers. Special types of glass, glass coatings, and fabric curtains have been tried with varying degrees of success, however, paint has been found to be entirely satisfactory when chosen in a wise manner.

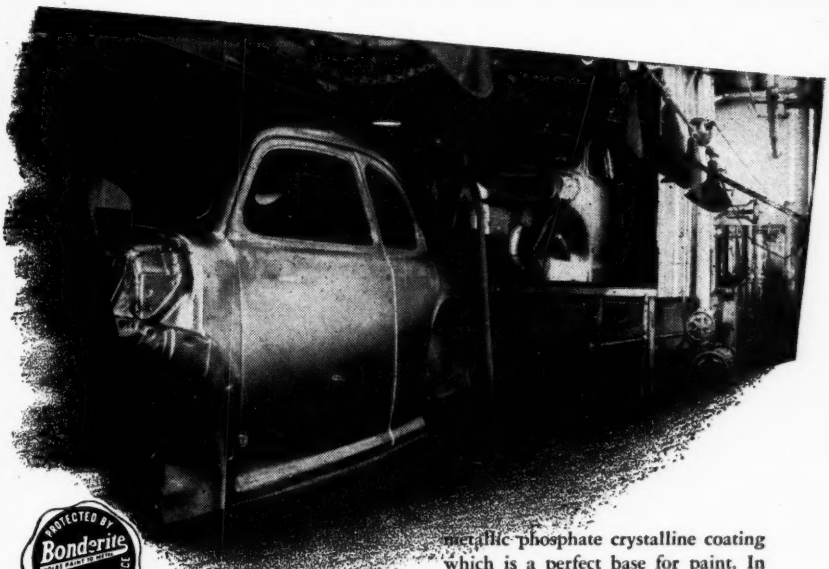
Glare from bright sunlight is less noticeable when walls are painted with ivory or another light color. Window frames and the dividing bars across the sash may be painted in a darker shade, usually the same material as used for the dado. Green or blue ceilings have been helpful in absorbing excess glare, but in most cases ivory has been found more effective in tempering bright sunlight.

Where windows are glazed with special glare-reducing glass, the color of the glass itself must be taken into consideration in selecting the wall color. For example, green would not be satisfactory with blue glass, but might work out very well with amber. In both cases, ivory would probably be the preferred color.

Under 24 hour per day operation, a plant is working under artificial illumination about twice as many hours as with natural light. Glaring light fixtures seen against a dark painted or stained background are distractions. If the ceiling is increased in reflection factor by using white or light

BONDERIZING

...the start of the automobile's fine finish



PROTECTED BY Bonderite MUST PAINT TO MEET FOR CORROSION RESISTANCE

Before the prime coat and the sprayed and baked finish coats, comes the trip through the Bonderizing line. Here bodies, fenders, and sheet metal parts get the treatment which protects and preserves the appearance of the final finish.

This effective, fast, economical treatment is used on most cars, trucks, and buses manufactured today. Bonderizing changes the surface of metal to a non-metallic phosphate crystalline coating which is a perfect base for paint. In addition, it affords good protection from rust and corrosion, retards the spread of finish failure around accidental breaks in the paint film, promotes lasting fine appearance.

Bonderizing costs far less than its value as a product improvement and sales feature.

Investigate Bonderizing as protection for the fine finish of *your* product!

PARKER RUST PROOF COMPANY, 2172 East Milwaukee Ave., Detroit 11, Michigan

BONDERIZING	PARKER PROCESSES	PARKERIZING	PARKER PROCESSES	PARCO LUBRIZING
Holds Paint to Metal		Inhibits Rust		Retards Wear on Friction Surfaces

Bonderite, Parco, Parco Lubrite—Reg. U. S. Pat. Off.

colored paint, the glare is reduced. (For information on the light reflection values of colors, see Table II.)

Lighting

With modern fluorescent lamps, the unit brightness of the light source is much lower than with incandescent lamps. Light colored ceilings are, therefore, appropriate with this type of equipment and are highly effective in producing attractive and efficient industrial interiors. As a color background for fluorescent light, avalon blue with a medium blue dado can be introduced with good results. Strangely, the effect produced with fluorescent light is not cold as is usually the case with this color. In a drafting room with a high degree of fluorescent illumination no better combination can be recommended than avalon blue walls and medium blue trim. Ceilings may be white, or, in some cases a tint of avalon blue works out well. This is done by mixing equal parts of avalon blue with white.

Both ordinary and fluorescent light tend to distort the color of paint. Yellow and peach are considerably altered by fluorescent light. The effect is to give a greenish cast to the yellow and a grayish cast to the peach. Brown loses considerable warmth of tone under fluorescent light and beige is subject to the same change. To assure a good job, it is always well to make the final choice under the actual light used in the plant. This can be done by simply viewing the color panels in the actual location where they will be used. Precaution must be taken where warm tints of peach, buff, beige, and brown as well as jonquil yellow are used under fluorescent lighting.

Machine Colors

The brightness of the machine colors should be approximately the same as the surroundings. Strictly from the standpoint of dirt accumulation, brown, medium blue, and silver gray are the most practicable. It is found that employees keep a machine clean out of sense of pride if it is painted in attractive colors. It is advisable to select the color that gives the best general appearance and the best seeing conditions for a given job, rather than one which is practicable from the dirt accumulation standpoint alone.

Generally, the wall color corresponding to the color of the machine may be used as the silhouette color. The silhouette color is either ivory or a lighter shade of the machine color and is used to make it easier to see the work itself. It cuts eyestrain and gives the plant a better overall appearance.

Adjoining Room Colors

In large plants, a single color harmony will not always meet all conditions throughout the plant. Abrupt change in color from one department to another is equally objectionable.

Use
Crystal
TACK RAG
BEFORE YOU SPRAY
Will Not Generate Heat
Nor Smoke When Stored
in a Warm Place
Always Soft and "Tacky"
Speed Up Your FINISHING PRODUCTION LINE with this Soft Tacky Cloth
BCP
TACKY WIPERS
Available in GROSS LOTS thru PAINT DEALERS or from the Processor
Industrial Size 18 x 36
Spontaneous Combustion Proof
Exclusively Processed by
BAUGHN CHEMICAL PRODUCTS CO.
7027 North Ravenswood Ave. . . . Chicago 26, Illinois

From Out the Pages of the Past

COMES THE NEW

Stevens
"STANDARD"
FULL AUTOMATIC
RETURN TYPE SMALL
PARTS PLATING MACHINE

To meet today's needs, we have developed another proven leader for the plating industry . . . our

STANDARD SMALL PARTS PLATING MACHINE

It provides a complete processing cycle of cleaning, acid, strike, plating, rinses, bright dip and drying.

Work to be processed is manually or automatically loaded into the basket . . . and returned to practically the same point and automatically unloaded . . . permitting one operator to easily handle the entire operation.

Plating time can be increased or decreased by finger tip adjustment of timer control. Plating baskets rotate continuously in all operations.

Bright dip provided with independent variable treatment time mechanism.

Write for Bulletin SPM which illustrates and describes this machine.

FREDERIC B. STEVENS INCORPORATED

DETROIT 26, MICHIGAN

- NEW ENGLAND — 166-182 Brewery St., New Haven, Conn.
- NEW YORK and PENNSYLVANIA — 91 State St., Buffalo, N. Y.
- INDIANA — Hoosier Supply Co., 36 Shelby St., Indianapolis, Ind.
- CANADA — FREDERIC B. STEVENS OF CANADA, LIMITED
  - 1262 McDougall St., Windsor, Ontario
  - 2368 Dundas St., West, Toronto, Ontario

Related color harmonies solve this problem. As an illustration, assume one area is to be painted with a midland green wall and a green dado, and another, where heavy work is done, is to be painted with buff walls and a brown dado. Since these two harmonies are in such strong contrast, it is advisable to make the transition from one room to another less noticeable by introducing two other harmonies in intermediate rooms.

An ivory wall and a medium green dado is an easy transition from the midland green, medium green dado room, since the dado and the dado stripe are the same. Similarly, the ivory wall and brown dado is an easy step from the ivory wall and medium green dado for in this case both have ivory walls. And finally, the ivory and brown of the preceding room blend easily with wellington buff and brown because both have a common dado and dado stripe.

TABLE II—
LIGHT REFLECTION VALUES

White	84.0%	Light Gray	53.6%
Cream	70.4%	Sage Green	41.0%
Light Pink	69.4%	Aluminum Gray	41.9%
Ivory	64.3%	Brown	23.6%
Yellow	60.5%	Dark Red	14.4%
Flesh	56.0%	Dark Green	9.8%
Buff	55.4%	Dark Blue	9.3%
Light Green	54.1%	Black	10.0%

Thus, with four color combinations in adjoining rooms or departments, a complete change-over in the color atmosphere is accomplished without undue contrast at any particular point.

Safety Colors

Safety or accent colors, as they are sometimes called, have caused considerable discussion by paint manufacturers of late. One paint manufacturer reserves red for fire protection equipment only; orange for identifying dangerous parts of machines that might cut, crush, or otherwise injure a workman. The American Standards Association has another color code for marking hazards which recommends red for identifying fire protective equipment as well as danger points and emergency buttons on bars for stopping machinery.

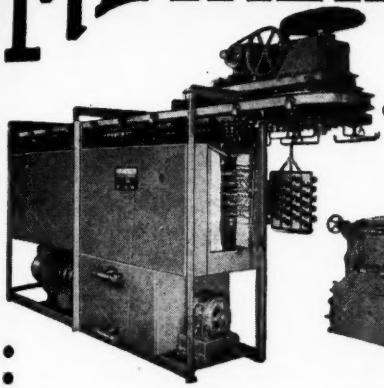
The Sherwin-Williams color idea is guided more by the principles of good color selection than by a specific code of color usage. With a silver gray machine, red is recommended as the accent color; with beige or brown, orange; and with blue, yellow. These recommendations give a high degree of visibility with an attractive appearance. However, in all cases, red may be used without interfering with the color scheme.

Expanding on this theory, it is believed that accent colors should be used sparingly. A danger color should be used only at points of extreme hazard, otherwise the significance of the signal is lost. Excessive use of accent colors, according to some color engineers, to identify operating levers and controls is also unnecessary. Most operators have long practice at their work and could actually manipulate the levers and control devices in the dark. There are cases where an attention-compelling color such as yellow or orange substantially speeds up the work if it is used on a handle or operating device. The operator moves faster because he is sure of himself, particularly if the switch or lever is not readily accessible or is not lighted to a very high degree.

Four Steps to Good Color Job

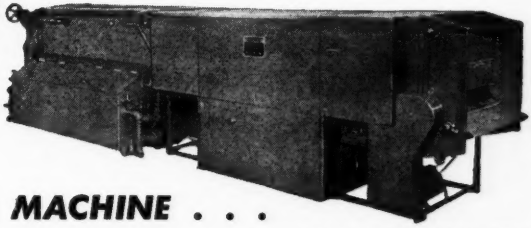
Four steps are essential for a first-class color modernizing job. The plant must be streamlined. Equipment must be arranged in an orderly manner, and miscellaneous items, such as stock piles, lockers, and so on, must be removed and put into sep-

METALWASH



Overhead Conveyor Type Spotless Dryer

Flat Belt Type Washing, Rinsing and Drying Machine



IN A WASHING MACHINE . . . IT'S THE SPRAY THAT COUNTS!

CLEANING

PICKLING

DRYING

RUSTPROOF

EQUIPMENT

METALWASH Machines are equipped with special, high pressure nozzles and powerful, standard pumps designed to accomplish the most difficult cleaning jobs in minimum time.

We design and manufacture a complete line of equipment for cleaning, processing and drying metal parts, including monorail conveyor, roller conveyor, flat belt conveyor, revolving drum and rotary table types—also an unlimited variety of specially designed equipment for the unusual and complicated cleaning and drying problems.

If you have a cleaning or drying problem, let us serve you. Inquiries are invited.

METALWASH MACHINERY CO.
149-155 Shaw Avenue Irvington 11, N. J.

arate buildings wherever possible.

Proper illumination comes next. Painting in the right colors is important to good light, but no amount of painting can overcome the handicaps imposed by glaring lamps directly in the operator's field of view or insufficient light at the work level.

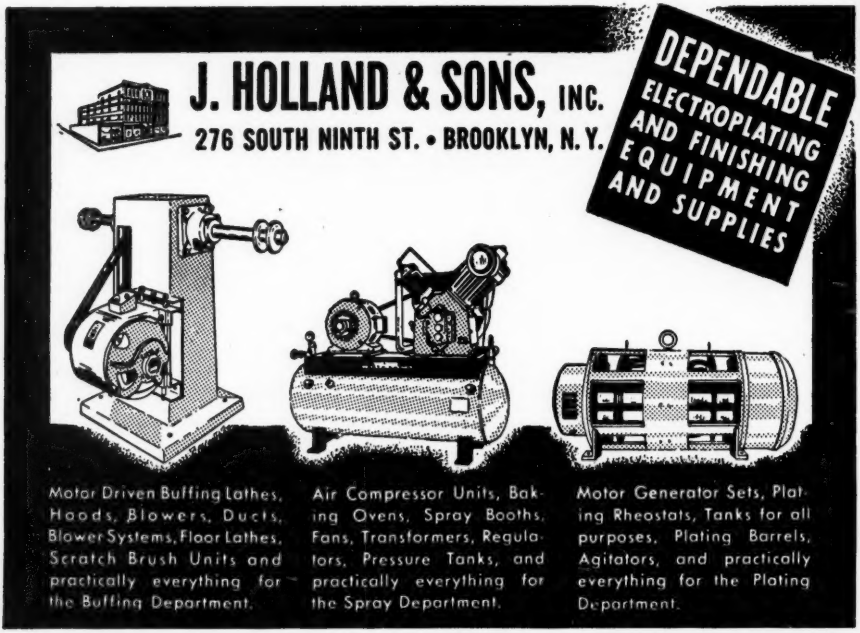
Next comes color selection. Only after all factors concerning a plant are considered in their relative value should the color choice be made.

And finally is the proper placing of the colors selected. This in many respects is the most important step of all, and, due to the variety of conditions encountered, calls for imagination and careful thought.

When all of these considerations have been justified, the result should be a plant that lowers production costs, cuts down eyestrain, improves morale, and one that will give justifiable pride to the management for a job well done.

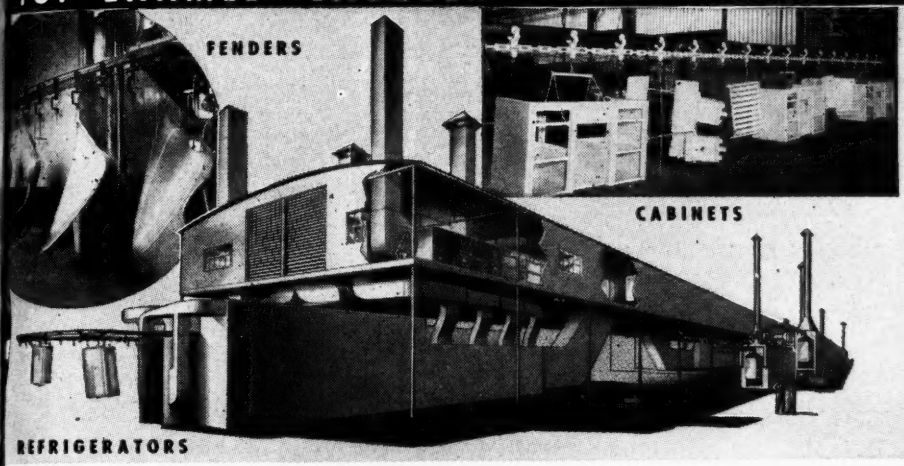
"Engineering Properties and Applications of Ni-Resist" is the title of a revised 36-page well-illustrated booklet now being offered by The International Nickel Co., Inc., 67 Wall St., New York 5. N. Y. Completely indexed, the booklet provides detailed information on the physical and mechanical properties of this widely used cast nickel alloy and also discusses performance under a wide variety of industrial conditions involving corrosion, heat, and wear. Corrosion data for 400 corrosive media are presented in tabular form. Copy free to executives.

"Mercury Lamps in Industry" is the title of an eight-page folder published by the Lamp Dept., General Electric Co., Nela Park, Cleveland 12, Ohio. The folder states briefly the facts regarding G-E mercury lamps for industrial lighting in medium and high-bay industrial interiors and lists their various advantages. Typical installations of the lamp are illustrated on the center spread of the folder, which also contains physical and electrical specifications of the AH-9 (3,000-watt) and AH-1 (400-watt) mercury lamps. Copy free upon request.


J. HOLLAND & SONS, INC.
276 SOUTH NINTH ST. • BROOKLYN, N. Y.
DEPENDABLE ELECTROPLATING AND FINISHING EQUIPMENT AND SUPPLIES
Motor Driven Buffing Lathes, Hoods, Blowers, Ducts, Blower Systems, Floor Lathes, Scratch Brush Units and practically everything for the Buffing Department.
Air Compressor Units, Baking Ovens, Spray Booths, Fans, Transformers, Regulators, Pressure Tanks, and practically everything for the Spray Department.
Motor Generator Sets, Plating Rheostats, Tanks for all purposes, Plating Barrels, Agitators, and practically everything for the Plating Department.

SYSTEMS

for ENAMEL • LACQUER • PAINT • VARNISH



. . . Planned, Engineered and Built to Produce the Finest Finish Obtainable

Regardless of what your product is—regardless of its size, shape, or weight—if it receives a finish of enamel, lacquer, paint, or varnish, the Mahon organization stands ready to produce equipment which will give it a better finish and do it more economically on a straight line production basis. If plant space is limited, Mahon will build the entire system on the roof or adjacent to existing buildings —the housing becoming an integral part of the equipment. You may turn your entire finishing problem over to Mahon with complete confidence, because, over twenty-five years of experience and pioneering development, in this highly specialized field, have endowed them with a wealth of technical knowledge and practical know-how not available to you elsewhere. See Mahon's Insert in Sweet's Mechanical Industries File, or call in a Mahon engineer for consultation.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 11, Mich. . WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems including: Metal Cleaning Machines, Rust Proofing Machines, Dry-off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Units, and Drying and Baking Ovens. Also Paint Sludge Reclaiming Units, Hydro-Foam Dust Collectors, and many other Units of Special Production Equipment.

MAHON

Barrel Finishing of Metal Products

Part 14—The Phenomena Termed "Ball Pattern"

By H. LEROY BEAVER
Barrel Finishing Consultant
Lansdale, Pennsylvania

FROM time to time in shall we say somewhat isolated cases of written discussions, as well as in verbal comment, the problem of what is generally termed "ball pattern" is brought to the fore in connection with barrel finishing operations. Generally, we have discovered from those antagonistic to barrel finishing procedure that from whatever angle such a procedure could be examined and evaluated, it is a method for the surface treatment of metals.

During the last thirty years, we have probably seen and examined more products that have been barrel processed than most people and, strictly speaking, this thing commonly termed ball pattern has been conspicuous only by its complete absence from the picture. True, we do have surface defects that do not clean up in a barreling operation but to designate every and all such defects as ball pattern caused in some way by impact between balls used as the finishing medium and the parts in process is shooting so very wide of the actual mark as to be simply untenable.

What then is a ball pattern? Perhaps we might best describe it by turning to something quite apart from barrel finishing procedure and examine just what happens to the surface of a metal product that has been subject to a ball pattern indentation obtained either through a formal Brinell or Rockwell hardness test, where either a 5 or 10 mm. steel ball has been forced into the surface of the metal and the width of the indentation then measured and compared with a fixed scale to determine the hardness of the part under test. This defect we would recognize and admit to be a true ball pattern indentation, but such a characteristic indentation is not what we find when we examine under magnification the various defects attributed to a ball pattern as supposedly produced in a barrel finishing operation.

Then there is another method for determining the surface hardness of metals by the use of the Shore Scleroscope wherein a diamond pointed plunger is dropped on the metal surface and the rebound measured by a fixed scale to determine the hardness. There is a very great difference in appearance between the spherical indentation caused by a Brinell ball and the indentation caused by the plunger of a scleroscope and yet on examining a host of alleged ball pattern indenta-

Tested for Quality **SOLD AT REGULAR MARKET PRICES**

Udylite carries one of the largest stocks of plating and finishing supplies in the country—ready for immediate shipment—sold at regular market prices.

And, every item in the stock has been tested for quality in Udylite laboratories. Only materials which meet our rigid specifications are accepted in our warehouse.

Without paying any more for his supplies, the Udylite user obtains the benefit of expert, experienced laboratory control of quality. He is assured that what he buys at Udylite will be the best obtainable—exactly meeting specifications. This is a Udylite extra service well worth having.

Udylite

THE UDYLITE CORPORATION
DETROIT 11, MICHIGAN
REPRESENTED IN PRINCIPAL CITIES

tions we have found that under magnification they really resemble far more the scleroscope scar than anything that could be compared with a Brinell pattern.

We will grant you, of course, that we do find defects and mars on the surface of metal products that have been subjected to a process of barrel finishing, some of which are created in the barrel finishing process itself, and others, and we should say in the greater majority, are caused by carelessness in operations preceding the actual barrel finishing. We have found it to be our common experience that when we are asked to make a survey of the production operations in a given plant where barrel finishing is employed that it is the common practice to want to lead us directly to the barrel department and then and there and without further ceremony to have the management place the blame for all of their troubles directly on barrel finishing. And it is precisely at this same point where, as a good many presidents, vice presidents and general managers, superintendents, and lesser luminaries could testify, that we suddenly go stubborn and refuse to agree with the contention of the management. Unless we are permitted to examine into all of the operations performed on the parts to be barrel finished prior to their being delivered to the barrel finishing department, we just simply refuse to go along at all, and there are cases where we have even executed a "walk out."

What do we find then in such an examination of prior operations that might later show up as defects in the barrel finished product? First of all and especially in the case of stampings is the matter of pushing parts off the

LARGE CASTINGS—SMALL METAL PARTS—LONG THIN PIPES ARE THOROUGHLY AND QUICKLY CLEANED IN A

BLAKESLEE

SOLVENT *Vapor* DEGREASER

G. S. BLAKESLEE & CO.

BLACOSOLV DEGREASERS AND SOLVENT

NIAGARA METAL PARTS WASHERS

G. S. BLAKESLEE CO., CHICAGO 50, ILLINOIS · New York, N. Y. · Toronto, Ont.

Right! IT'S "GOOD-BYE FOREVER" TO OBJECTIONABLE ODORS OF OLD-FASHIONED ADHESIVES!

BACK IN the horse and buggy days you couldn't avoid it. But now you don't have to stand for it—you don't have to put up with Stockyards Odor in polishing adhesives one minute longer. Do as progressive plants everywhere are doing. Switch to GRIPMASTER . . . the modern, more efficient, *odor-free* polishing wheel cement. **There's NO S.O. IN GRIPMASTER!**

Among America's leading industries . . . and in foreign countries over the globe . . . GRIPMASTER leads the way to new profits from polishing. *Do this now.* AT OUR EXPENSE, discover for yourself how GRIPMASTER (with its secret high-heat resisting ingredient) can increase *your* production . . . give you far more pieces per head! Clip coupon below. Send for generous free sample *today!*

One grade grips ALL grains—300 to 20

*Stockyards Odor

FREE GENEROUS SAMPLE

GRIPMASTER DIVISION
NELSON CHEMICALS CORPORATION.
12345 Schaefer Highway, Detroit 27, Mich.

IN CANADA:
Nelson Chemical Co., Ltd.
Windsor, Ontario

Please send us a generous free sample of Gripmaster.

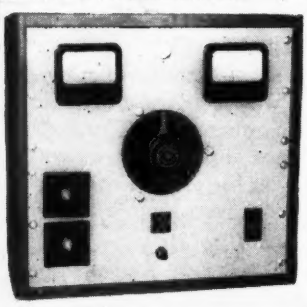
COMPANY_____
ATTENTION_____
ADDRESS_____
CITY_____ STATE_____

PF-10

bed of a press or dropping them through the bed into tote pans placed anywhere from twenty-four to thirty inches below and when each piece so dropped in its impact with other pieces in the pan provides for a potential surface defect on one and sometimes more than one part. Then, too, there is the practice of an operator taking a small pan of work and pouring it from a waist high position into another pan on the floor where the same potential defects may be created. Anyone working on strip metal that is passed through presses for blanking or forming or both knows that the metal is slushed with oil to prevent rust and corrosion and perhaps too to provide for some measure of lubrication for the dies. When so covered with grease, it is difficult to see the defects that may be caused by the impact of careless handling that we have just noted. It might provide an interesting experiment and be somewhat educational at that if some press shop superintendents would take parts that have been so treated purely carelessly and put them through a formal cleaning process as we have so often done, as well as have had done, and then to note the surprise to find that a lot of the things for which barrel finishing is too often held responsible actually happens long before the parts ever reach the barrel finishing department. We think that we might be permitted to describe the surface of most such parts as "dirty," and it is not until they are properly cleaned and then barrel burnished that these defects stick out like the proverbial "sore thumb."

This is not to say, however, that all the barrel finishing departments in which we have at one time or another found ourself are above reproach in the matter of creating defects prior to the actual revolving of the parts within the burnishing mass in the barrel, whatever its type may be. Carelessness both in loading and unloading of the barrels will also provide a just reward in digs and mars on the surface of the parts in process. We have often wondered why barrel manufacturers pretty generally in providing illustrations of their barrels show them with the loading opening at the highest possible point and we have wondered even more that operators seeing such illustrations seem to insist on loading their barrels from this same high position, not thinking we suppose that a drop of say twenty-four to thirty inches as parts are poured into the barrel makes any difference whatever in the character of the surface of the finished product. Yet right here we have a prolific source for the creation of surface defects, all of which, of course, must be attributed to some motion created within the barrel while it is in operation, the ultimate or end product of which could be nothing other than this same thing termed "ball pattern."

SELENIUM RECTIFIERS



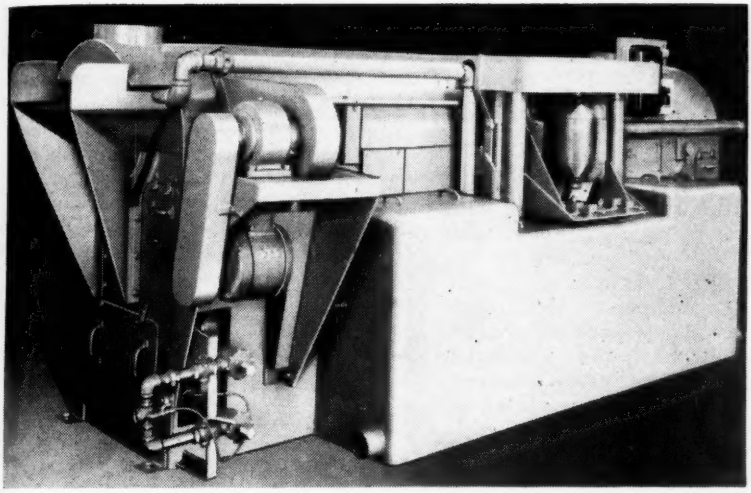
Model 2239—150A—0-8V

We manufacture other size rectifiers ranging from 25 to 1500 amperes at 6 to 16 volts. All units are rated for continuous operation at maximum efficiency. Please write for additional information.

RAPID ELECTRIC CO.

Dept. P, 2847 Middletown Road
Bronx 61, N. Y.

RANSOHOFF ENGINEERED CLEANING ASSURES LOWEST CLEANING COSTS



Let's talk things over at
THE NATIONAL METAL EXPOSITION CHICAGO, SPACE 1020

See the life-size cleaning machines and miniature foundry mill

THE PROBLEM: how to clean aircraft nuts and bolts at lowest cost.

THE ANSWER: this DRUM TYPE CONTINUOUS WASH AND RINSE MACHINE which occupies small space . . . but does a BIG JOB AT LOWEST COST.

Let **RANSOHOFF . . . THE GREATEST NAME IN ENGINEERED CLEANING** . . . Show you what it can do to save you time, labor, money.

N. RANSOHOFF, Inc.

1311 Township Avenue **Cincinnati 16, Ohio**

METAL CLEANING MACHINES AND FOUNDRY CLEANING MILLS

Whether your barrel is of the high and narrow Abbott type or the long and narrow Baird type, a simple strut can be placed under the barrel against one of the cross bolts on the Abbott and under the base of the Baird so that the

Fig. 1—Drawing showing approximate design of ball pattern produced on a flat surface metal part during barrel loading

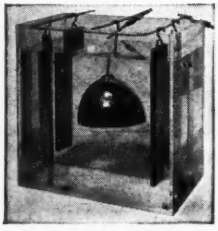
parts can be simply eased into the barrel with little or no impact and with assurance of the elimination of any surface defects being caused by improper loading technique. It is also true that the manner in which some barrels are unloaded do not produce the best results insofar as the creation of surface defects are concerned. There is no reason that we are aware of that would prevent any barrel operator from improvising a canvas unloading baffle that would ease the parts from the barrel into the unloading tray. Such a device, however, is the rarely seen exception rather than the rule.

What we have heretofore said of stampings holds equally well for castings since they may no more be carelessly handled than the parts made from sheet or strip materials.

With reference to a ball pattern itself, just what would it look like if you were to see it on the surface of a part? Well, we should say that it must be in the nature of a perfect or near perfect spherical indentation closely conforming to the surface arc of a round steel ball, or in outline somewhat as shown in Fig. 1. It is this precise pattern that we do not find, but we do find other characteristic surface scars such as mars and digs that might be roughly represented by the sketches in Fig. 2. These, of course, are all on flat surfaces, however, when such mars are apparent on curved surfaces, instead of a ball-shaped indentation we more often find what is a decided **flat** caused by impact, as shown in Fig. 3. Of course, all of the foregoing is not to say that impact scars and marks do not also happen in the actual barrel

Fig. 2—Drawing showing approximate design of mars and digs produced on flat surface metal parts during barrel loading

finishing operation itself but we do undertake to say that this same thing called "ball pattern" is not one of the characteristic defects that may be caused in a barrel finishing operation. To those of you who have followed all



HIGH TEMPERATURE LUCITE PLATING TANKS for LABORATORY and PRODUCTION PLATING

Singleton tanks are made of high temperature Lucite to give unlimited life, resistance to all aqueous acids with no contamination even when changing from one bath to another, ruggedness, heat and electrical insulation, and transparency.

SEE THE BATH IN ACTION!

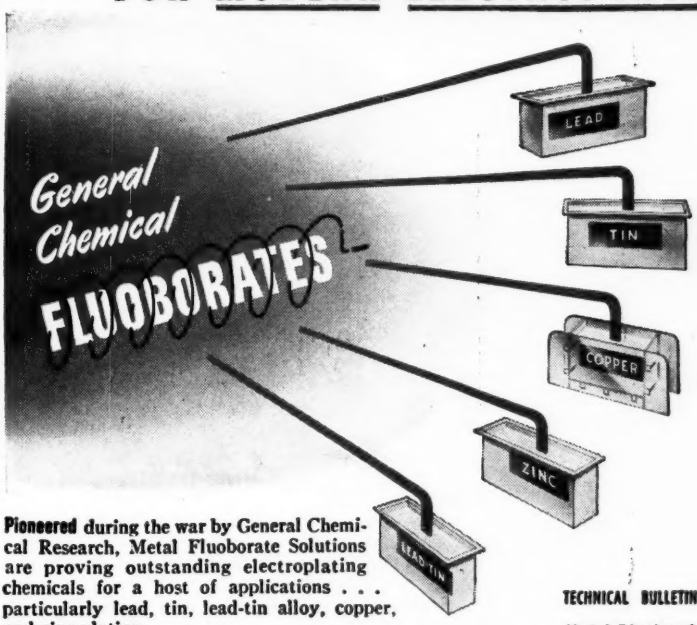
Our Singleton Production Tank, a Lucite tank within a steel tank, is the ideal, permanent answer to your plating problems at no higher cost.

Everything in Plastics for the Platers.

SINGLETON COMPANY, • 9823 Lorain Ave., Cleveland 2, Ohio, Woodbine 9056

NEW DEVELOPMENTS

FOR MODERN ELECTROPLATING!



Pioneered during the war by General Chemical Research, Metal Fluoborate Solutions are proving outstanding electroplating chemicals for a host of applications . . . particularly lead, tin, lead-tin alloy, copper, and zinc plating.

The Metal Fluoborates offer electroplaters a combination of features long desired but hitherto unobtainable in other plating agents:

1. Supplied in concentrated solution form . . . no mixing or dissolving necessary.
2. Simplicity of bath preparation.
3. Stability of bath composition.
4. Ease of control.
5. Practically 100% anode and cathode efficiency.
6. High conductivity.
7. Good covering power.
8. Fine grained deposits of good color.
9. High speed operation.

Learn more about these new developments for modern electroplating without delay! Experimental samples are available from General Chemical Company, Fluorine Division, 40 Rector Street, New York 6, N. Y. As always, General Chemical's skilled technical servicemen are ready to give you complete details and every help in preparing for trial or full-scale runs.

GENERAL CHEMICAL COMPANY

40 Rector Street, New York 6, N. Y.

Sales and Technical Service Offices in principal cities from coast to coast

TECHNICAL BULLETINS AVAILABLE

Metal Fluoborates Bulletin 1015-A—General information on Metal Fluoborates, plus specific operating data on plating with Lead, Tin, and Cadmium Fluoborate.

Technical Information Manual ZF-1—The New Approach to Zinc Plating.

Technical Information Manual LTF-1—Lead-Tin Alloy Plating from the Fluoborate Bath.

Technical Information Manual CF-1—Copper Fluoborate.

of these discussions you will recall that we have repeatedly noted that in the operation of barrels generally, when the operation is for cutting down or surface removal, the barrel is loaded to just slightly over one-half full, but for pressure burnishing to provide for a lustrous finish, then the loading

Fig. 3—Drawing showing approximate design of mars produced on curve surface metal parts during barrel loading

should be approximately two-thirds full. We suppose, however, it would be safe to say that we have more barrels being operated today at the one-half full loading level than any other way. When the load is placed in the barrel it is generally leveled off, however, as soon as the barrel is started in operation, the load is lifted so as to form an inclined plane, and the faster the barrel is operated the more precipitous this inclined plane will become. Each panel of the barrel lifts the entire mass above the even or level line and each of these lifts, which might be termed efforts, produces a force. In a barrel of thirty-inch diameter, this inclined plane might be shown as in Fig. 4, with the barrel speeds as noted.

Viewing the operation through a glass end barrel you would find that at the inclination of the mass as shown at 8 r.p.m. the parts in process will emerge from the mass as the barrel revolves at the point marked x and will then be carried along on top of the mass until they reach the spot on the plane marked y where they will burrow into and be incorporated in the mass, never touching the sides of the barrel. At 15 r.p.m. you will note that the parts emerge from the mass at x

FOR 25 YEARS
THE SIGN OF QUALITY

HARRISON
4A

BUFFING and POLISHING COMPOUNDS

"TAILOR-MADE" FOR YOUR PRODUCT"

Our twenty-five years experience, exclusively in buffing and polishing compounds assures you of the **right** compound for the **right** metal.

HARRISON & CO., INC.
Dept. 3 Haverhill, Mass.

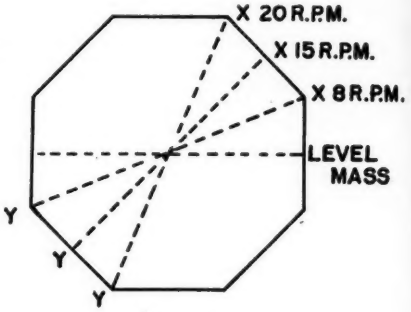


Fig. 4—Drawing showing how the load in a burnishing barrel is lifted so as to form an inclined plane, the angle of which depends upon the barrel speed

and again enter the mass at y but with a more rapid motion and carry through than at 8 r.p.m. However, at 20 r.p.m., the inclined plane of the mass is so sharp or steep that parts emerging from the mass at x will swiftly slide down the inclined plane of the mass

QUICK TEMPORARY PROTECTION for Finished surfaces during assembly

"SCOTCH" Masking Tape speedily applied to finished areas and trim gives complete protection during final assembly and finishing, removes readily when such operations are completed. Equally effective on metal, glass and plastic.

TYPICAL PROTECTIVE APPLICATIONS:

● to the bearing surfaces of crank shafts ● to the cutting edges of tools ● to the journal ends of printing rolls ● to glass and plastic during sand blasting ● to crackle finish on sewing machine bodies to prevent marring when machinery is assembled into casting (see illustration above).

Prevent expensive refinishing by protecting painted, lacquered, bright metal and other finished areas with "SCOTCH" Masking Tape. A "SCOTCH" TAPE field engineer will be happy to call without obligation and give you the benefit of his experience.

REG U S PAT OFF
SCOTCH BRAND *Masking* TAPE

Made in U.S.A. by MINNESOTA MINING & MFG. CO. St. Paul 6, Minn.
THE 3M COMPANY

where instead of immediately being incorporated into the mass they will pile up and each succeeding part will have impact with parts that have gone before. It is at this point where we

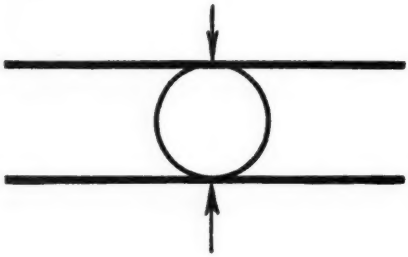
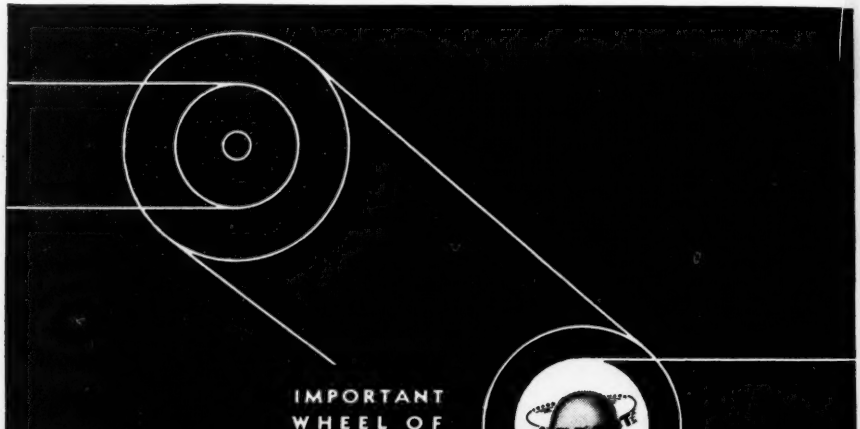


Fig. 5—Drawing showing manner in which a burnishing ball would have to be engaged between two absolutely parallel planes in order to produce a ball pattern

have found that the major part of marring of parts in process occurs. Maybe this sketch will assist you to understand too why we have always insisted that no barrel of as great a diameter as thirty inches should be operated at a higher speed than 12 r.p.m. which, of course, will provide an inclined plane of the mass to provide for the normal and even flow of the mass itself but without causing deformation or marring of parts in process.

It is, of course, understood that parts of great symmetry, such for example as a perfectly round object, may be operated at higher speeds than more intricate shapes or forms. Expressed in the language of the mechanics of the barrel finishing operation, it may be said that as parts range away from the truly symmetrical, a regulation of the control of the speed of the barrel is necessary commensurate with the size and shape of the parts under processing. This is true irrespective of whether the parts are stampings, castings or forgings and



Saturday night

CLEANER COST CUT 72.5%

DIRTY ENGINES COME CLEAN WITH PENNSALT CLEANERS

When you were a little boy, Saturday Night meant *one* thing: soap, water and a scrubbing brush.

But in the shop of a certain West Coast motor reconditioner, "Saturday Night" meant something else: high cleaning costs, with only fair results in removing oil, grease and carbon from used motor blocks.

Our Pennsalt representative called and showed their manager how he could save time and money with Pennsalt Metal Cleaners in their baths. Not only did this test give better cleaning with less cleaner loss, but best of all showed a *72.5% reduction in cleaner cost.*

Now the manager's eyes shine like his motor blocks!

If you have a cleaning or descaling problem, let a trained Pennsalt technical representative help you solve it. Just write: Special Chemicals Division, Pennsylvania Salt Manufacturing Company, 1000 Widener Building, Philadelphia 7, Pa. . . . New York • Chicago • St. Louis • Pittsburgh • Cincinnati • Wyandotte • Tacoma • Portland, Ore.

PENN SALT

METAL CLEANERS

98 years of service to Industry

irrespective of the metal of which they are composed.

That such a thing as a deliberate "ball pattern" would be most difficult

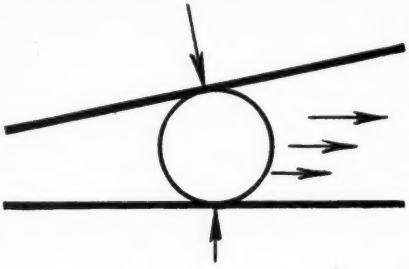


Fig. 6—Drawing showing how a burnishing ball engaged between two planes that are not parallel makes only needle point contacts and tends to spurt from between the two planes

to accomplish even though one set out to do that very thing might be illustrated by saying that a round ball due to its nature provides only a needle point of contact and to produce a ball pattern it would be necessary for the ball to be engaged precisely between two absolutely parallel planes, as shown in Fig. 5. If the two planes between which the ball might be located were subjected to pressure, and assuming that your soapy water lubrication was all that it should be and that the planes were not parallel, such as shown in Fig. 6, then you would find that due to its needle point contact plus the soapy water lubricant that the ball would spurt from between the two points of contact with a great deal more of dexterity than would the proverbial greased pig slip through your hands if you tried to catch him at the Convention of Visiting Firemen.

Since we can find so little evidence of ball pattern, it must also be true that we would find no more evidence of a pattern being created by any of the formed burnishing pieces used in barrel finishing generally. It is quite

Speed is important in electroplating—it can easily determine your profit. MGC equipment will complete your plating jobs faster, better and at lower cost. Compact single-unit construction, ball bearings, special windings give trouble-free service. There's a size and model for every plating requirement—experimental to heavy duty plating.

MOTOR GENERATOR CORP., Box PF-107, Troy, O.

MGC Buffers and Grinders are especially designed for all plating work and will operate with utmost efficiency and economy. Write today for complete details.

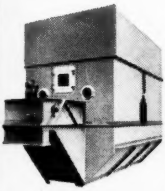
MGC "One of the World's Largest Builders of Electric Generators"

Eats DUST and FUMES from YOUR production

Schmieg CENTRI-MERGE DUST and FUME Eliminator

AUTOMATICALLY

- **COLLECTS** —at point of origination.
- **CLEANS** —by high pressure water action.
- **DISPOSES** —by mechanical conveyor in the form of sludge.



Like a huge octopus, with its tentacles (ducts) reaching out to every working area where contamination of air occurs, the Schmieg CENTRI-MERGE Eliminator sucks up and consumes all dangerous dust and fumes—literally eats them up.

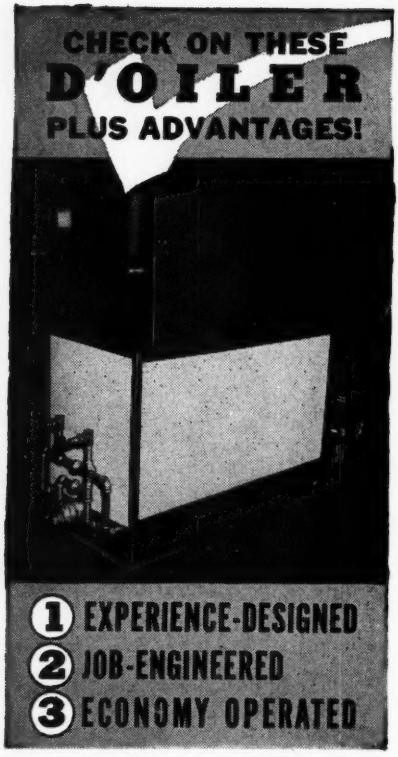
Picked up at the point of origination—BEFORE *any damage can be done*—dust and fumes ride an air stream through the ducts to the Collection Unit. Here CENTRI-MERGE goes into action—washing—scrubbing—pounding out the dust and dirt in a tornado of cleansing water. Dust particles are deposited—under water—in a sludge tank at base of Unit.

We welcome the opportunity of proving what CENTRI-MERGE can do for you.

THE *best* AIR PURGE is CENTRI-MERGE

Schmieg INDUSTRIES INC.

Engineers & Manufacturers



FOR THOROUGH METAL CLEANING

The D'OILER Vapor Spray machine, illustrated above, can be used as a vapor-spray, or a straight vapor degreasing unit. Drain table recaptures dragout from basketed parts . . . all-around insulation reduces heat losses . . . exhaust duct on two sides safeguards operator . . . pump drive for standby solvent eliminates hand pouring.

Every D'OILER type is built to do a specific job . . . is designed with the "on-the-job experience" necessary to provide a degreaser that does the work, in the required volume, economically.

Our engineers will gladly advise on degreasing problems; your inquiries will receive prompt attention. Write today.

Mechanical
PROCESS COMPANY
P. O. BOX 88, SOUTH ORANGE, N. J.

true, as we have so often said, that the race is not always to the swift and we have also found that when barrels are operated at a conservative rate of speed, defects are few and far between and that when they do appear it is always well to check into the operations preceding the actual barrel finishing operation to determine whether careless handling above everything else is not at the bottom of the trouble.

So please don't be stampeded into a panic by anyone threatening that your parts will suffer from ball pattern defects if barrel finished. It just isn't true if you will use the good sense to operate your barrels both in loading and unloading and in operating speed to provide for a smooth and even flow of the burnishing mass over and around the center of the axis of the barrel.

Standard Buffing and Polishing Machines. The Standard Electrical Tool Co., 2518 River Road, Cincinnati 4, Ohio, now has available a 16-page catalog illustrating and describing its line of heavy duty and extra heavy duty buffing and polishing machines in sizes ranging from ½ to 60 h.p. The catalog also covers the company's line of infinitely variable speed buffing and polishing machines with the "Speedial" Control which permits any desired speed between 1,500 and 3,000 r.p.m. to be instantly obtained. Copy of Catalog B-10 free upon request.

"Vinylite" Resin VMCH. The Bakelite Corp., 330 E. 42nd St., New York 17, N. Y., now has available two four-page technical releases relative to "Vinylite" Resin VMCH for coatings and adhesives. Technical Release No. 1 discusses the general characteristics, advantages, and properties of the resin. Technical Release No. 2 describes the correct techniques of pigmenting coatings which are to contain Vinylite Resin VMCH. The procedures of solving certain problems which may arise are also covered.

Copies of Technical Releases Nos. 1 and 2 are available free to coating users and formulators upon request.

Distributors of Du Pont Degreasing Solvents are located in important manufacturing cities, within come up with the answer to your problem. If field tests don't pro-

Distributors of Du Pont Degreasing Solvents are located in important manufacturing cities, within easy call from your plant. Backing up their efforts are the Du Pont Technical Representatives. They are available, on short notice, to work with you, to be of service to you in degreasing applications.

If things aren't working out the way you think they should . . . if you feel that your solvent losses are too high . . . that you're not getting the best results from equipment or solvent . . . or you have some question about how to handle and use the solvent . . . just call or write to the nearest Du Pont distributor. And you'll get a competent man, thoroughly familiar with degreasing, a man who will help you come up with the answer to your problem. If field tests don't provide a quick answer, there's a supporting group of engineers, chemists and specialists, research and laboratory facilities in Niagara Falls to fall back upon for even more help.

★ ★ ★

ABOUT DU PONT DEGREASING SOLVENTS

Under various trade names, Du Pont Trichlorethylene and Perchlorethylene solvents for metal cleaning have been in wide use for many years. They are the best Vapor Degreasing solvents we've ever made—the best we know how to make. Use them with complete confidence and assurance for all metal degreasing work. E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

Tune in to Du Pont "CAVALCADE OF AMERICA," Monday nights—8 p. m. EST, NBC

DU PONT SOLVENTS for VAPOR DEGREASING

SOLD NATIONALLY THROUGH DISTRIBUTORS

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Chrysler Corporation's Paint Methods Department

By BRYANT W. POCOCK

IN two previous articles, outstanding applications of finishing procedures have been traced throughout production lines at Chrysler Corporation's Dodge Division and Chrysler plants. This article, the last of the series, will deal with the system of paint research and paint control which is conducted under the direction of the Paint Methods Department of Chrysler Corporation.

The Paint Methods Department is responsible for the control of the quality of all production materials used in the manufacture of all automotive vehicles made by Chrysler Corporation and subsidiaries. All paint used in the course of vehicular or automotive manufacture must meet with the approval of this department. This includes combination primer-surfacer undercoat, seal coat, finish enamels, wheel paints, and so on, as well as any

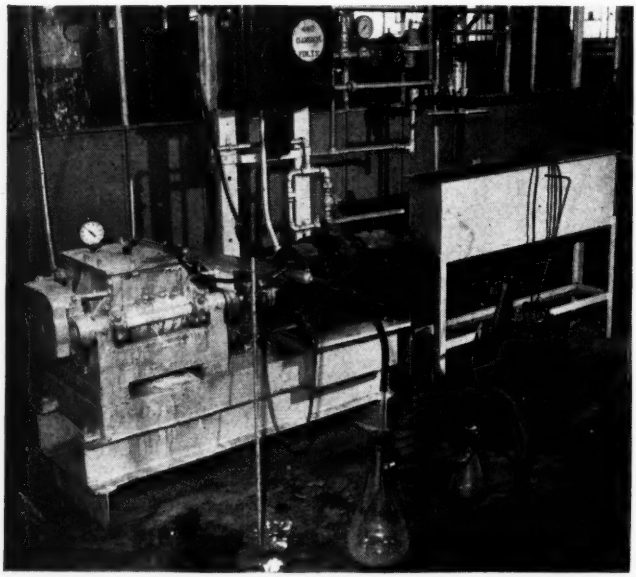


Fig. 1 — Heavy duty steel-jacketed mixer adapted for use in Chrysler's Paint Methods' laboratory for the vacuum distillation of experimental batches of recovered enamels

* footnote on good shop-keeping

If you want to keep your shop looking clean, start from the floor up. Use Wyandotte Zorball, the *all-purpose* floor absorbent, to remove oil, grease, water and other liquids or combinations of liquids quickly and efficiently.

Zorball gives an immediate anti-skid surface to soiled floors, thus reducing the danger of slipping accidents. And it is non-flammable. Even when soaked with oil, it will not readily support combustion.

Zorball is safe, too. It is harmless to fabrics, metals and rubber, and to the skin of those who handle it.

Your Wyandotte Representative will be glad to demonstrate the effectiveness and economy of Wyandotte Zorball. Why not give him a call today?

Wyandotte
REG. U. S. PAT. OFF.

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN • SERVICE REPRESENTATIVES IN 88 CITIES

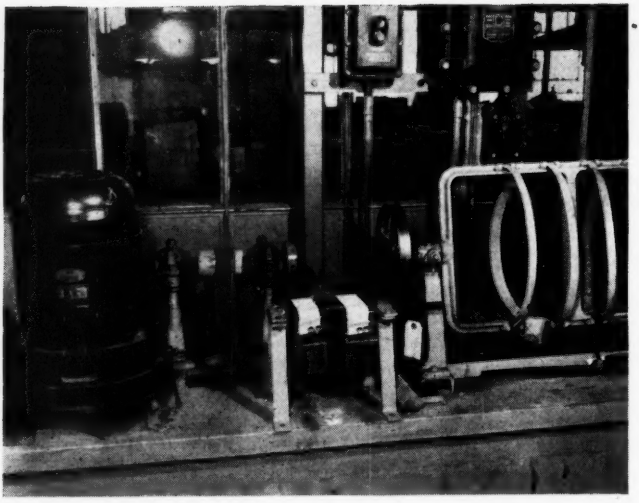


Fig. 2—Precision wear test apparatus used in Chrysler Corporation's Paint Methods' laboratory for measuring durabilities of recovered enamels

other paints used. In addition, the department assumes responsibility for the collection and reclaiming of all paints otherwise lost through overspray. Paint Methods' laboratory conducts continuous research directed toward the improvement of paint quality and the refinement of paint control practice, as well as the evaluation and adaptation of optimum economic considerations.

Chrysler Corporation points with pride to a valuable and highly significant outcome of its research on and control of paint methods. This consists in the outstanding degree to which the finishes on all Chrysler-made cars have been known to hold up during the late war, when it was a question of having a car last or doing without such a conveyance.

The Paint Methods Department possesses a unique system of operation. Connected with no specific division in particular, the department cooperates with all divisions and is responsible directly to the corporation. Its activities and its interests lie closely with those of production in all plants, and its goal is one of service to both production and administration. Physically, the department is centrally located. It has access to and from time to time calls upon the files and even some of the equipment of the engineering corrosion laboratories in the Highland Park plant. It functions as a consulting center for all departments of all Chrysler plants.

In general, production samples of all paints are spot checked periodically, control samples being forwarded to Paint Methods' laboratory. There, the samples are examined for such qualities as adherence, sanding and filling characteristics, enamel hold-out, corrosion and bending resistance, susceptibility to chemical and physical breakdown, and so on. Enamels are sprayed on test panels, baked, and then checked for hardness, luster, color, and so on, in addition to the foregoing properties. Salt spray, water soak, and humidity cabinet tests are performed, as well as additional types of accelerated weathering tests.

In the case of all finish enamels, tests are made of hiding power and hiding uniformity, color control, film-forming characteristics, total solids and volatile matter, initial and final hardness, and gloss. Test panels are primed and enameled in accordance with production conditions and baking schedules and are sent to Fort Lauderdale, Florida for exposure to sub-

Pick the Best!

● Before the game, they look alike—same uniform, same build, same action. But when the referee's whistle blows and the crowd roars— that's another story. . . One proves to be the stand-out—a crack passer, punter, runner.

That goes for coated abrasives, too! . . . Before you use them, they all look alike. But, when you put them to work, only one has all three—the longest lasting, fastest cutting and best finishing qualities that make it the stand-out!

And that's Michigan Coated Abrasives—the Abrasives with all three qualities, *and in proper balance*—balance that means performance that *saves you money* on materials and *makes you money* by producing more pieces with better finish at the least possible cost.

All we say is—try it and see. Phone, write us, or get *Michigan* Coated Abrasives the next time you order.

Michigan Abrasives are supplied in Sheets, Rolls, Discs, and Belts—paper or cloth backed—And in Silicon Carbide, Aluminum Oxide and Garnet—in full range of Standard grit sizes.

MICHIGAN *Coated Abrasives*

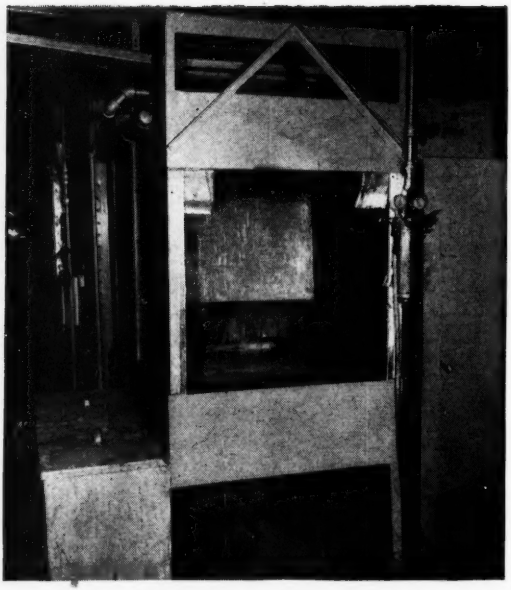


Fig. 3—Experimental water-washed spray booth used for research purposes in Paint Methods' laboratory

tropical weather. The Florida exposures are studied by Paint Methods with respect to gloss retention, resistance to checking, color fading, chalking, and general weather resistance.

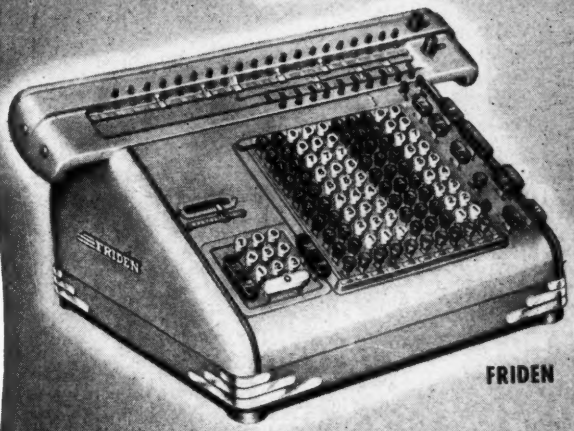
A great deal of reliance is placed upon results obtained by the use of Florida exposure panels. It is felt that these panels indicate true stabilities of enamels under a wide variety of actual weather conditions, most of the latter being of an adverse nature, in a location where 6 months of exposure are equivalent to about 2 years of Detroit weathering. Such tests are considered to be among the most practical of all possible tests.

Panels are returned from Florida after 3, 6, and 9 months of exposure for laboratory evaluation and interpretation of durability. After the first 3 months of weathering, one-third of the surface of the panel is cleaned with a mild liquid polish. The polished enamel is then examined microscopically for indications of checking, using a moderate magnification. If necessary, photomicrographs are taken for permanent records. Particular attention is paid to the development of hairline or crowfoot checks, as these if present are frequently the first visible indications of incipient failure and ultimate breakdown. The process is repeated after the second cycle, at the conclusion of 6 months of weathering, and again after the third cycle at the end of 9 months of Florida exposure, the second and third areas being polished and examined. It is interesting to observe that most paint companies now are very much on the alert for failure of Florida exposure panels used in testing their products.

Paint Methods' laboratory contains a multitude of specialized as well as conventional apparatus. A heavy duty dough-mixer, steam-heated and equipped with sigmoid mixing blades (Fig. 1), has been adapted for the experimental vacuum distillation of paints. This is used continuously for research on problems connected with the economical recovery and processing of overspray enamels. Portable miniature equipment, comparable to production installations, is used for chemically treating test panels made from body and sheet metal steel. This treatment is used prior to the application of the primer and is essentially a process for depositing a phosphate coating. This process improves adhesion and retards the spread of corrosion in the event the paint films are badly scratched. The equipment is used for testing and

Exclusive

THE 3 BIGGEST ACCOUNTING MACHINE MANUFACTURERS IN THE WEST USE FULLER BAKING FINISHES *exclusively*



FRIDEN

MARCHANT

FULLER *Industrial* **FINISHES**

W. P. FULLER & CO.
Industrial Finishes Division
San Francisco 19, California

controlling the chemical solutions used in production. An electrically heated, thermostatically controlled water soak tank maintained at 180 degrees F. is used for water soak tests. Additional equipment includes banks of infra-red lamps, precision wear test meters (Fig. 2), ball mill racks, spray booths (Fig. 3), automatic salt spray cabinet, refrigerator and "Deepfreeze" unit, centrifuge, ovens, muffle furnace, film thickness gages, refractometers, gloss meters, cryptometers, viscometers, pH meters, microscope, Sward rocker, and other equipment.

A ball mill rack is used in connection with reclaimed paint studies for determining lengths of time required to produce smooth consistencies in recovered enamels. An unusually large automatic ASTM salt spray cabinet of Chrysler design is maintained at 90 degrees F., with 20 per cent concentration of salt solution, to produce a dense spray, that gives rise to an indirectly saturated atmosphere with which no metal is allowed to come in contact. An experimental, midget-sized production type water-washed spray booth complete with sludge collection tank is available for use in reclamation tests, for evaluating spraying characteristics of reclaimed enamels. Magnetic type film thickness gages are employed for measuring the primer and enamel on cars painted in production and in the investigation of various painting materials which have been tested in the laboratory.

Equipment originally designed for testing the wear resistance of fabric has been modified and adapted for use as a precision wear test meter. In this capacity, it functions in effect as an instrument for estimating the abrasion resistance of enamels. The wear

Fig. 4—As indicated in this illustration, the recovery of enamels assumes gigantic proportions in Chrysler Corporation's Lynch Road reclaiming plant

YOU CAN GET AN ORGANIC FINISH WITH

ADHERENCE . . .

BUT WILL IT ALSO MEASURE UP ON

FLEXIBILITY?

Unichrome Coatings offer you the *Right Combination* of properties for your product . . . every time!

ADHERENCE ALONE isn't enough in a finish when the product may be subjected to twisting or bending—as in a measuring tape, for example. You need *flexibility* also, to prevent chipping or cracking.

And when you can also get *film hardness*, and clear, high *gloss* in the *same* synthetic coating—you have a finish that's really outstanding! Those are the very properties—all four—offered you in Coating B-115.

Which is why one manufacturer chooses B-115 to help "sell" flexible steel tapes. Another manufacturer finishes strip with B-115 *before* fabricating his product, for he finds those properties permit subsequent forming without any harm to fine appearance!

Whatever you make, chances are there's a Unichrome finish with the right combination of properties for it—ready to help you save on rejects and build sales. Write today for more details on Unichrome Synthetics and Lacquers.

*Trade Mark Reg. U. S. Pat. Off.

UNICHROME SYNTHETIC COATINGS AND LACQUERS

Products of UNITED CHROMIUM, INCORPORATED

51 E. 42nd St., New York 17, N.Y.

Detroit 7, Mich. • Waterbury 90, Conn. • Chicago 4, Ill. • Dayton 2, Ohio • Los Angeles 11, Cal.

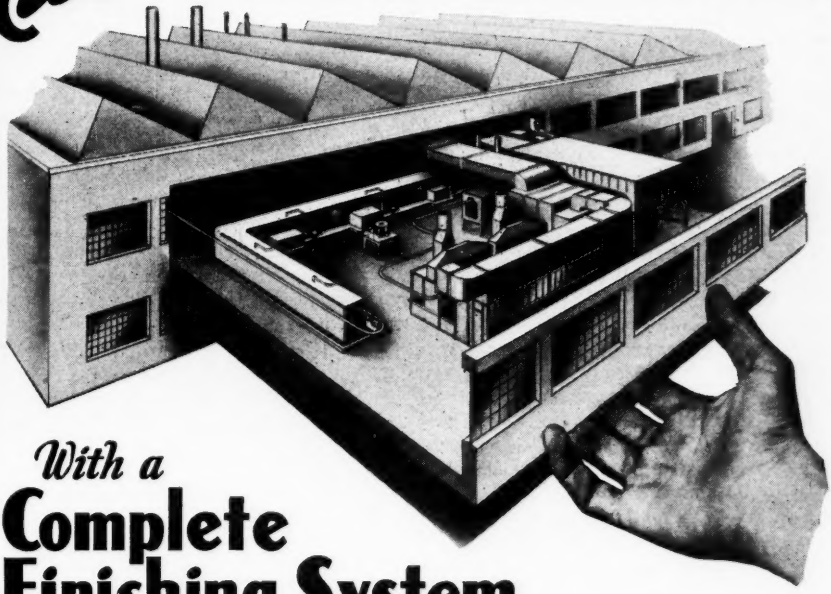
Fig. 5—Another view of the interior of Chrysler Corporation's enamel reclaiming plant on Lynch Road

test is made by using a strip of No. 8 Oceanic Duck as an abrasive. The strip is 1¾ inches wide cut in the direction of warp and free from such imperfections as knots or heavy threads which might be detrimental to a smooth and uniform surface. A fresh strip is used for each test. A load of 3½ lb. includes the clamp. The duck strip must rub against the enamel finish at the rate of 90 oscillations per minute, with a travel of 3 inches. Preparation of the paint film for wear evaluation must be such as to produce a final film thickness of the enamel coating of from 0.001 to 0.0015 inch. The enamel, after baking for 35 minutes at 250 degrees F. or equivalent and then aging for 72 hours at R.T., must resist 100 hours' continuous rubbing without showing signs of wearing through to the underlying material.

Paint Methods makes use of a muffle furnace for checking resistance to high temperatures of heat-resistant finishes. The aluminum engine finish, for example, must withstand temperatures of 1,000 degrees F. for a minimum of 100 hours without discoloring, flaking, or powdering. Most well-known and universally recognized Henry H. Gardner paint tests are employed from time to time in the Paint Methods Department.

Chrysler Corporation enjoys the ownership of a number of patents covering overspray paint reclamation, one of which is U. S. Patent No. 2,086,514, dated July 14, 1936. The corporation maintains and operates its own paint reclaiming department under the direction of the Paint Methods Department, where all corporation paint is recovered and processed and then distributed to the various Chrysler plants (see Figs. 4 and 5). No plasticizers or other additives are used in supplementing such recovered paints, since none is lost during the recovery process. Certain common ingredients, however, are lost, and it is for this reason —these being deleterious ingredients

Cut Production Costs



With a Complete Finishing System

Planned and Operated as a **SINGLE UNIT!**

BEFORE considering the purchase of "so-called" standard finishing room equipment, allow us to conduct a study and acquaint you with savings . . . (1) in initial costs, (2) in saving of floor space through compact design, (3) savings in production costs through integration of the finishing stages . . . brought about by engineering WASHERS—SPRAY BOOTHS—OVENS to your product and production requirements. The above artist's conception is but one of many complete systems *wholly* engineered and installed by

METAL SHOW CHICAGO Oct. 18-24 — VISIT OUR EXHIBIT — BOOTH No. 1828

PETERS-DALTON, INC.
17908 Ryan Road, Detroit 12, Mich.

GENTLEMEN:

- ☐ Please have a representative call
- ☐ Please send your latest literature

We *are interested in:*

- ☐ A complete finishing system
- ☐ Metal parts washers
- ☐ Paint spray booths
- ☐ Drying and baking ovens

Signed _____ Company _____

Address _____

HYDRO WHIRL

PETERS-DALTON

INCORPORATED

17908 RYAN ROAD

—that Chrysler-recovered enamels are are nearly always superior to the original products.

Alkyd resins, almost universally used in the manufacture of synthetic enamels, are composed essentially of phthalic anhydride plus glycerine, modified by the addition of certain polymerizing or oxidizing type oils. These resins when cooked are often not reacted (the ingredients "coupled up in the cook") in trace amounts. These minute quantities of unreacted substances when present are carried over into the finish enamel, and the difficulty is that these traces of uncoupled phthalic anhydride and glycerine are water soluble. Free phthalic anhydride and glycerine impart no beneficial properties to a synthetic enamel. If they are present in trace amounts only, they probably do no harm; if, however, they exist in quantities over and above a very low threshold tolerance, they may actually give rise to undesirable properties. Certainly the leaching action of water over a long period of time should be expected to diminish gloss by long-continued solvent action.

Chrysler-used enamels are tested for the presence of these water-soluble constituents, and no enamels are used in which such substances are found to exist. A double check process is afforded, however, in the case of enamels reclaimed by the Chrysler process. These reclaimed enamels cannot possibly possess any water-soluble material even as traces, for these would be removed during recovery. Even though the above statement that Chrysler-recovered enamels are superior to the original enamels is contingent upon the presence of water-soluble constituents in the original materials, such a statement cannot be considered incorrect in view of the positive assurance that even such traces as are indetectable must be completely removed by the reclaiming technique employed.

Enamels entering the spray booth water are washed down into sump tanks, where eventually they come to the top and float on the water. A technique has been developed for skimming these enamels off the surface of the water and transferring them to settling drums. After a period of settling in the drums, they are removed and subjected to a method of cold processing. This consists of a physical squeezing or kneading action designed to remove a large portion of the water and the last remaining traces of any water-soluble constituents mechanically.

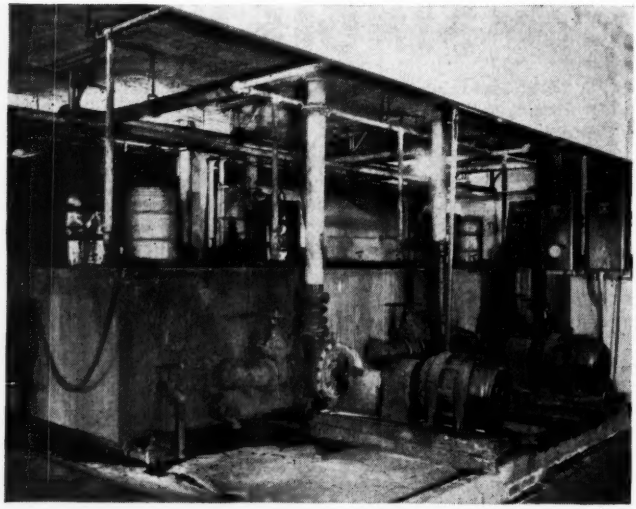
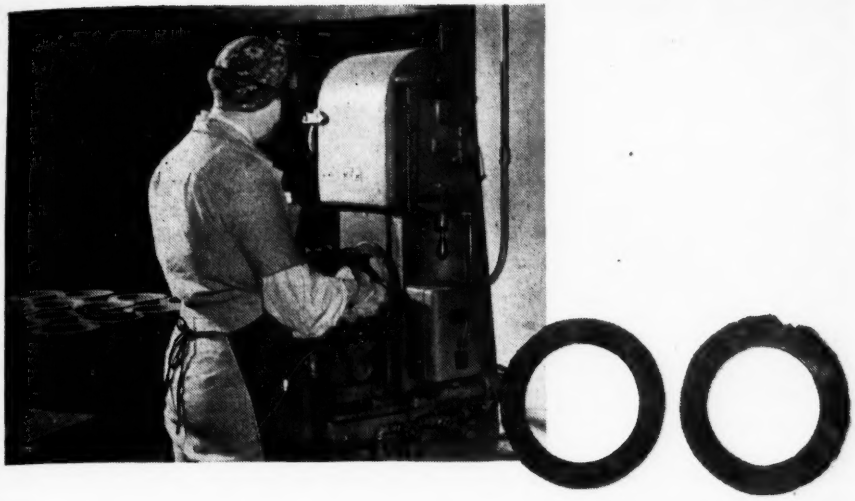


Fig. 6—Typical sludge collection tanks used in Chrysler Corporation plants for collecting enamels to be recovered on Lynch Road

A smooth, precision finishing method



Many grinding and finishing jobs, because of type of metal, grade of finish or precision requirements may be handled with greater speed and economy by the 3M Wet Grinding Method. This method gives faster cutting, lower operating temperatures and a longer period of peak grinding efficiency for the abrasive belts. More constant cutting speed permits a closely controlled rate of cut. Metal parts may be finished to tolerances of .005 of an inch or less.

The smooth, even cutting action secured when 3M Abrasive Belts are cooled and cleaned with water or a sanding lubricant brings metal surfaces to a satin-smooth finish that needs little or no buffing and polishing. Welds, burrs, tool and die marks disappear in record-breaking time.

Our booklet, "A Faster Better Finishing Method," shows how the 3M Wet Grinding Method is cutting production time and production costs in many lines of industry. Your name and address on the coupon below or a telephone call to your distributor of 3M products will bring you a copy without cost.

MINNESOTA MINING & MFG. CO.
Saint Paul 6, Minn.

☐ Please send us a copy of your booklet "A Faster Better Finishing Method."

☐ Have a 3M Sales Engineer call.

By.....

Firm.....

Address.....

City..... *Zone*.. *State*.....

3M
ABRASIVE BELTS

ANOTHER 3M COMPANY PRODUCT

Made in U. S. A. by
MINNESOTA MINING & MFG. CO.
Saint Paul 6, Minn.

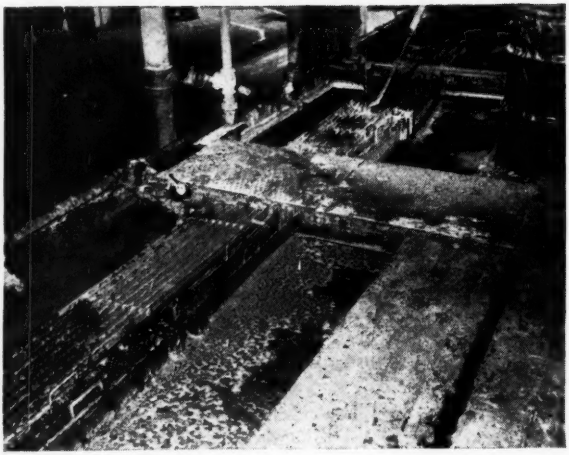


Fig. 7 — Close-up view of sludge collection tanks used in Chrysler Corporation plants for collecting enamels to be recovered in Lynch Road reclaiming plant

Up to this point, enamels have been subjected to the long-standing action of water in the spray booths, conduits, sludge and sump tanks (Figs. 6 and 7), and settling drums. Any constituent which can conceivably dissolve in water may be reasonably assumed to have done so by now, and to be washed away. This fact is actually borne out by repeated, highly precise tests which indicate their absence. It only remains then to remove all traces of water. This is done by vacuum distillation. Solvent is added to thin out the enamel to a viscosity satisfactory for distillation, steam lines are opened, the vacuum is turned on, and distillation progresses.

After the last traces of water have distilled over, the recovered enamel is filtered on a coarse mesh strainer, and then centrifuged. It is then blended to specific operating viscosity and finally strained through felt bags. Every batch of recovered enamel is subjected to rigorous checks in Paint Methods' laboratory and sent on test panels to Florida for exposure cycles. Periodic collections are made from the overspray sludge tanks of all Chrysler plants. The distillation process is carried out in a vacuum since much lower temperatures are involved in vacuum distillation than would be the case with distillation at atmospheric pressures.

Chrysler has set up its own specifications for special types of enamels as a consequence of research carried out by the Paint Methods Department. These include special enamels for coil springs, others for small parts, and still others for interior fittings, wheels, seat back frames, and so on. Engine enamels must be resistant to gasoline of all brands, octane ratings and additive contents, and to all types of oils. All exterior enamels must possess outstanding inertness to calcium chloride used on highways for dust and ice control.

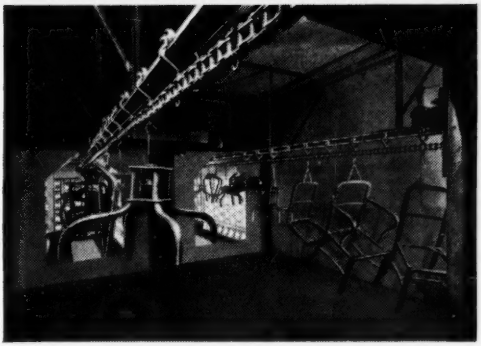
It is the contention of Chrysler's Paint Methods Department that the modern combination primer-surfacer undercoat is not fully as satisfactory as the older practice of applying separate coatings of primer and surfacer enamel, but that in many ways it may be actually superior. The reason for this is the fact that the combination type of undercoat produces a single continuous film with no intervening layer of "skin" resulting from prior baking of a separate primer coat. It is contended that the combination type results in an undercoat layer in which all discrete particles are more thoroughly intermingled than is true with separate coatings.

The question of the superiority of the combination primer-surfacer, how-

HOW TO SOLVE YOUR PROBLEM of Paint Baking *Irregular Shapes*

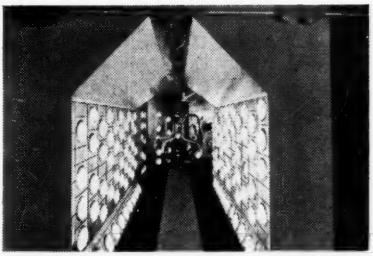
Profit by Experience of Sturgis Posture Chair Co.

Faced with the problem of paint baking steel chairs . . . *involving masses of open spaces* . . . Sturgis called in Jensen. Solving the problem was simple, thanks to Jensen "dual heat." The Jensen "dual heat" infra-red oven that accomplished the job with gratifying results for Sturgis is shown here.



Shapes including solid bases, tubular frames, tubular bases and angular frames are all baked with equal efficiency.

Exclusive Jensen "dual heat" is an efficient combination of both radiant energy heat and convection heat. Only by means of Jensen "dual heat" is it possible to bake . . . *quickly and properly* . . . irregular shapes with masses of open spaces such as these chairs have.



Because of limited space, oven was built in U shape. Note how parts are baked while going around curve of the U.

ACCEPT THIS OFFER

Without cost or obligation, we will run laboratory tests on your products, using your finishes. All parts will be returned for your inspection. Act today!

JENSEN SPECIALTIES, Inc. **JENSEN** 9331 FREELAND DETROIT 28, MICH.

DESIGNERS and BUILDERS of "DUAL HEAT" INFRA-RED OVENS • CONVEYORS • PAINT DIP TANKS

ever, ultimately depends upon the formulation of the latter. Subsequently overlying finish enamel must be absorbed or adsorbed by the undercoat, and the undercoat must possess a certain amount of "tooth" for good bond. The properties of a good primer are that it must be "long," tough, and considerably elastic. A good surfacer must be "short," is usually highly pigmented, must possess excellent filling qualities so that it can be easily sanded, and must be sufficiently porous to provide good tooth.

Inasmuch as neither color nor gloss is a matter of concern in the case of undercoats, it is possible to elevate undercoat baking temperatures within reason in order to shorten the time of baking. In this case, a chemical reaction occurring within the paint vehicle and resulting in a "cure" is accelerated by the elevated temperature. Gloss enamels, however, have very critical curing temperatures, and many pigments are adversely affected by elevated temperatures. Consequently, when dealing with these coatings it is generally considered too precarious for production methods to hasten cure by raising temperatures.

A word about gloss. An instrument is sorely needed which will detect and measure what the enamel technician understands by true luster. If an enamel is hazy, the operator wants to measure this haze, and the researcher wants to eliminate it. Haze at this writing is a more or less subjective quality. The strictly scientific concept of objectivity is currently lost on haze. When gloss is measured at 90 degrees, or normal to the surface, haze shows up if it is present, but it must be seen and estimated visually by the operator. No known instrument will measure it satisfactorily. The more oblique the angle at which gloss is seen or measured, the less haze can be observed, until at very oblique angles haze disappears entirely.

A proposed new laboratory has been planned by the Paint Methods Department, calling for 2,740 square feet of floor space. This laboratory will house all present equipment plus additional new equipment, with adequate provision for office space and storage space. It has been found at Chrysler, as is so frequently the case with all progressive laboratories, that storage space is forever at a premium. Consequently, Paint Methods intends to have an ample supply of built-in storage cabinets in its new quarters.

PRODUCTION

HIGH SPEED CENTERLESS FEED TYPE A POLISHING MACHINE

A better finish at a lower cost and unskilled labor is one of the outstanding features offered by the PRODUCTION POLISHING MACHINES. Small articles in cylindrical forms may be fed automatically without centering, chucking or holding. Has an unlimited range of work on metals, fiber, rubber, wood, etc.

ANY DESIRED FINISH ON RODS, TUBES OR BARS ¼" TO 6" IN DIAMETER.

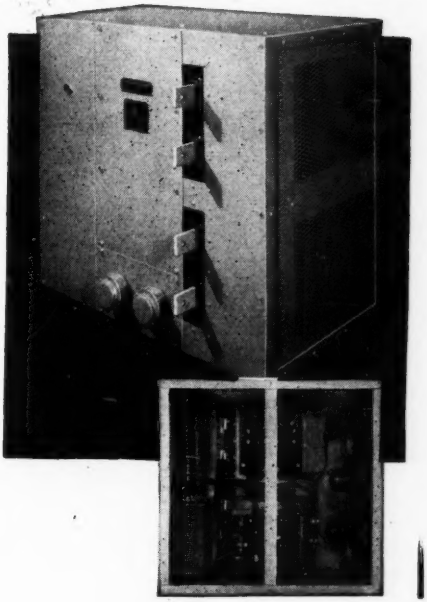
PRODUCTION MACHINE CO.

Greenfield, Mass.

"The Physical Properties of Synthetic Organic Chemicals" is the title of a 12-page booklet designed as a condensed guide for users of organic chemicals which has been issued by the Carbide and Carbon Chemicals Corp., 30 E. 42nd St., New York 17, N. Y. The booklet contains data on applications and physical properties of more than 175 synthetic organic chemicals. The material is presented in tabular form for ready and easy reference. Copy of the booklet is available free by requesting Form 6136.

INVESTIGATE!

BEFORE YOU INVEST IN DC POWER



WAGNER-TIEDEMAN ELECTROPLATING RECTIFIER

Offers:

- **FLEXIBILITY**
- **SIMPLE SERVICING**
- **LOW INSTALLATION COST**
- **LOW OPERATING COST**
- **LOW MAINTENANCE COST**

Selenium-on-aluminum cells handle momentary overloads up to 1000% of normal. Effective rectifying area over 4300 square inches. Three 40-watt fans provide ample low-velocity cooling. Transformer, two winding type, reserve capacity. Welded steel enclosure for vertical stacking if higher power is desired.

Output, 6 v. at 1500 amp., 12 v. at 750 amp., Input, 220/440 v. 60 cycle 3 ph.; power drain approximately 12 Kw. at full load. 34" high, 36" long, 22" wide, floor area 5.5 sq. ft. Weight, approximately 500 lbs. Other voltages and current capacities available.

GET THIS BULLETIN OF *Facts* . . NOT FICTION

Write today for "Wagner-Tiedeman Engineering Memorandum on Electroplating Rectifier"

METAL FINISHING EQUIPMENT

Wagner

BROTHERS INC.

POLISHING AND PLATING MATERIALS

431 Midland Avenue — Detroit 3, Michigan

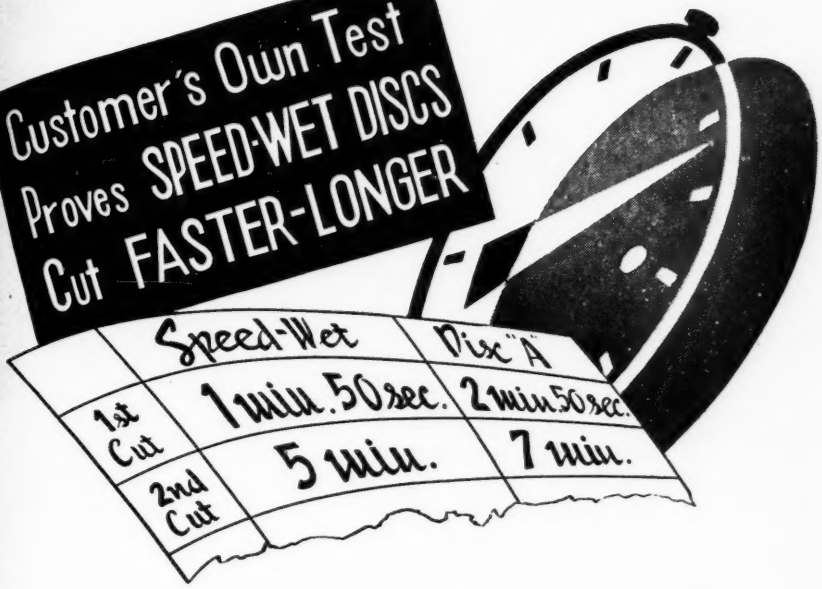
Finishing Clinic

Factors in the Selection of Protective Coatings

MANY examples can be cited in the metal-finishing industry of the improved service performance that is obtained by the proper selection of the protective coatings to be used. In discussing the selection of protective coatings before the Protective Coatings Division, Spring Regional Conference of the Chemical Institute of Canada, K. G. Compton of the Bell Telephone Laboratories pointed out that in establishing the basic principles on which the selection of protective coatings is founded, it is necessary to examine the fundamentals of the corrosion process as well as the basic properties of each of the various types of protective coatings. Theoretical consideration of the mechanism of corrosion provides for two basic types of reaction—one in which water plays an essential role and another in which direct combination between the metal and its environment occurs.

In the former, two reactions are found to be occurring simultaneously; one in which the metal is going into solution or corroding, and another in which hydrogen is being plated out of solution and evolved. Metals in contact with a wet environment develop an electrochemical potential at the interface between metal and environment. Compton pointed out that if the surface of a metal is explored, it would be found to be composed of numerous areas having different potentials. These differences give rise to what is known as corrosion couples. They may be produced by dissimilar metals in con-

Customer's Own Test Proves SPEED-WET DISCS Cut FASTER-LONGER



The test—fastest time to remove a specified weight of stock from a cold rolled steel bar—Speed-Wet Metalite Fibre Disc vs. leading competitive disc. Discs operated on portable grinder mounted in vise. Work pressure 7 pounds. Two cuts by each disc—first cut for initial cutting speed—second for sustained cutting speed after partial use. Time: First cut, Speed-Wet Disc—1 minute 50 seconds; competitive disc—2 minutes 50 seconds. Second cut, Speed-Wet Disc—5 minutes; competitive disc—7 minutes.

That's the way one plant proved for itself that Speed-Wet Discs cut faster—longer. If you haven't yet tested Speed-Wet Discs, the coupon will bring you a free demonstration.

TO: BEHR-MANNING—Troy, N. Y.
Please submit test samples of new Speed-Wet Discs. Hole ..... Grit No. .....
Dia. .....
Company Name .....
Address ..... Zone ..... State .....
City ..... Title .....
By .....

BEHR-MANNING
(DIVISION OF NORTON COMPANY)
TROY, N. Y.

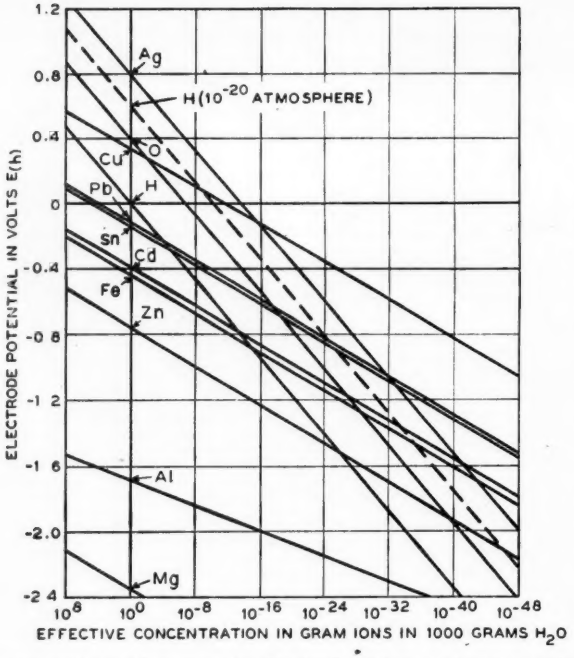


Fig. 1 — Chart showing the electromotive series of metals

tact with each other, by dissimilarities of composition in the metal surface, by differences in the degree of strain at different spots on the metal, by differences in the concentration of oxygen in contact with the metal surface, and many other related electrochemical effects. Areas at which hydrogen tends to be evolved are designated as cathodic, and those where the metal tends to dissolve or corrode are said to be anodic.

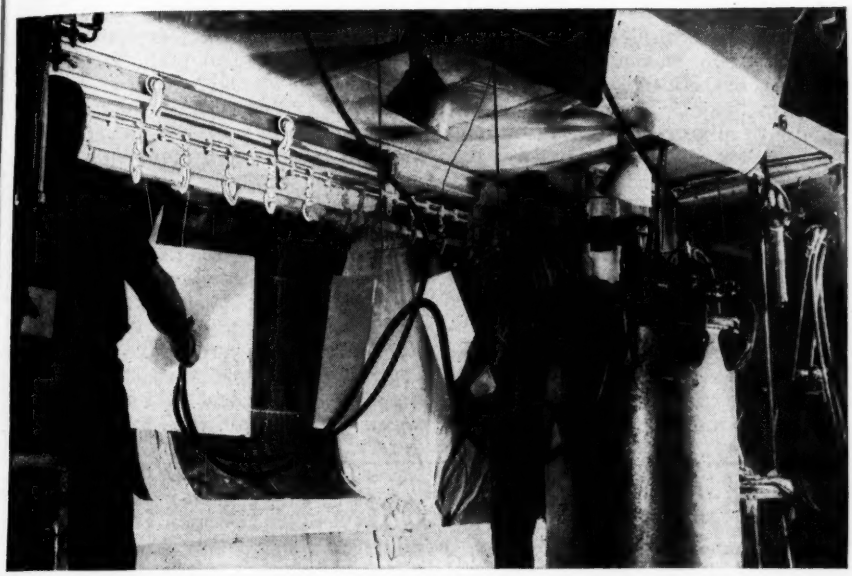
The electrochemical theory of corrosion is based on the electromotive series of metals, as shown in Fig. 1, in which each metal has its relative position with respect to the others by virtue of its potential in a given environment. From this figure, it is apparent, as pointed out by Compton, that concentration plays a very important role in determining the potentials of different areas on the surface of the metallic body.

Metallic coatings are usually cataloged in two groups. Those which are anodic, in the electrochemical series, to the metal to be protected are said to supply cathodic protection in that they sacrifice themselves to maintain cathodic polarization on exposed areas of the protected metal. Cadmium and zinc coatings on steel are examples of this type of protection. Coatings which are cathodic to the protected metal are effective only to the extent to which they form an impervious envelope about it. They usually are comprised of materials which are less easily corroded than the base metal or in some cases materials which provide themselves with natural protective films. Nickel, chromium, and silver on brass and steel are examples of the first class, and pure aluminum coatings on aluminum alloys provide examples of the second class.

Inorganic coatings may be divided into surface reaction products, of which the oxide film produced by the anodization of aluminum is representative, and additive coatings such as vitreous enamel. Compton pointed out that, in general, these coatings owe their effectiveness to the isolation of the protected metal from its environment and to the control of the corrosion current by the insulating properties of the coating.

In discussing organic protective coatings, they were divided into the

R·M enamels meet rigid demands of large stove manufacturer . . .



ONE OF the largest stove manufacturers in the middle west, employing the most modern techniques throughout its entire assembly operations, has secured for itself an enviable reputation for top quality domestic units.

Rinshed-Mason special high-heat-resistant baking enamels and primers, used on the various models, closely match porcelain for appearance and durability. R-M laboratory developed enamels are non-yellowing, retain their original bright color, are proof against fumes, grease and alkali.

Your inquiries are cordially invited.

Rinshed-Mason Company R·M Finest Industrial Finishes

5935 MILFORD DETROIT 10, MICHIGAN

REG. U.S. PAT. OFF.

following general classes: (1) paints, varnishes, and enamels; (2) lacquers and films of plastic resin; (3) waxes and bitumens; and (4) greases. Paints, varnishes, and enamels are comprised of various combinations of drying oils, hard resins, pigments, and, in some cases, driers. They may be air dried or may require baking. One feature of many of them is the adsorbtion of oxygen from the air to effect a "cure." The term "paint" is usually thought to apply to mixtures of drying oil and pigment; "varnish" to mixtures of drying oil and resins; and "enamel" to mixtures of varnishes and pigment. The term "lacquer" has gradually become applicable to all organic finishes that harden or "cure" by evaporation of solvents. As in paints and related products, a wide variety of materials is used, including cellulosic derivatives, vinyls, acryloids, and so on. Asphaltic or bitumen coatings are frequently applied in the molten state but in some cases applications from solvent cuts have been made. Waxes may be applied either as water emulsions or in the molten state. Waxes and greases are usually looked upon, more or less, as temporary protectives and frequently have ease of removal as an essential requirement.

The testing of metallic finishes, as pointed out by Compton, is largely limited to the determination of the thickness and distribution of the coating, followed by exposure of the specimens to corrosive environments under accelerated conditions. It is essential that the coatings on the test specimens be of known and uniform thickness in order to obtain satisfactory data. Zinc and cadmium, providing cathodic protection at pores and scratches, may be employed in thinner coats than most other coating metals, but are themselves susceptible to corrosion. Silver and gold are primarily used for ornamental purposes and

BUFFING and POLISHING MACHINES

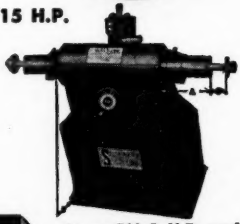
1500 to 3000 R.P.M. *Instantly* with the SPEEDIAL CONTROL!

The "Speedial" Control conveniently and quickly accomplishes infinite speed change between range of 1500 and 3000 R.P.M. High efficient production of buffing, polishing, coloring, etc., with uniform finish by maintaining constant peripheral speed. Longer wheel life. Reduced wheel cost.

As wheels wear, turn "Speedial" to increase speed and operate wheels at correct peripheral speed. The "Speedial" instantly records the spindle speed.

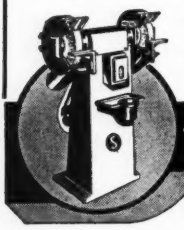
"SPEEDIAL" CONTROL ON 11 MODELS FROM 1 H.P. TO 15 H.P.

- **Maintains peripheral speed throughout wheel life.**
- **Gives you maximum usable wheel life.**
- **Lower production costs.** • **Higher production.**



Type RV 5 H.P. and 7½ H.P.

Visit our Booth No. 1914 at the Metal Show, Chicago, Oct. 18-24.



Builders of Standard Grinders, Buffing and Polishing Machines from ¼ H.P. to 60 H.P. Write for Catalog.

The STANDARD ELECTRICAL TOOL Co.

CINCINNATI · 4 · OHIO

2518 RIVER ROAD

Maytag WRITES:

"Our investigation... has revealed increases in corrosion resistance...as much as 300% when compared to uncoated zinc and cadmium surfaces. IRIDITE was selected for this assignment due to its simplicity of maintenance and processing, and the uniformity of results obtained."

Simple maintenance - - simple processing - - uniform results - - give IRIDITE the edge!

Here's a fast, sure way to lick corrosion . . . boost sales appeal and profits . . . in products of zinc, cadmium, galvanizing! Simply immerse parts in an Iridite solution . . . manually or automatically . . . in single racks or in bulk . . . for 15 to 60 seconds . . . at normal shop temperatures. No special equipment needed. No slow-down of production lines. Iridited parts are dried in a few seconds.

Use Iridite as a final protective finish . . . as a paint base for permanent adhesion . . . in combination with zinc plate to replace costlier materials. Iridite *unites chemically* with the metal . . . won't flake, chip or peel . . . won't alter dimensions. Available in bronze, olive drab, black and transparent Iridite Bright. Send today for your Free Test Panel, half coated with Iridite, half unprotected. Test it in your lab. *See* the difference! Write to: Allied Research Products, Inc., 4004 E. Monument Street, Baltimore 5, Maryland.

ALLIED RESEARCH PRODUCTS, INC.
IRIDITE
4004 E. Monument St., Baltimore 5, Md.

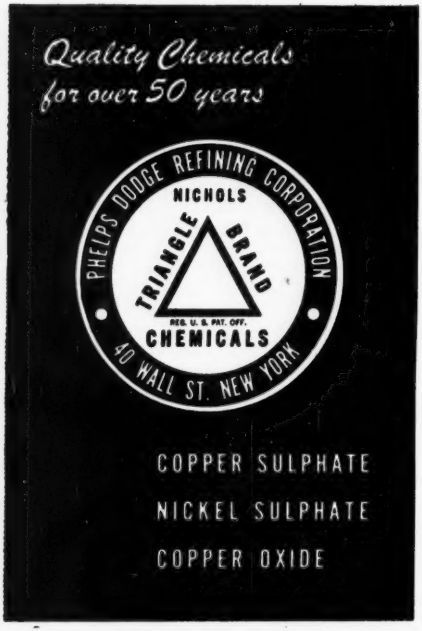
are dependent upon an undercoat in most cases for corrosion protection. Copper, tin, nickel, and chromium should be built up in total thickness to a point where porosity is overcome. In all cases, consideration must be given to the shape of the materials being coated with metal since the "throwing power" of plating baths has a very determining influence on the distribution of metal.

Atmospheric tests in rural, industrial, and marine atmospheres and tests in humidity rooms and salt spray are well-known evaluation procedures for protective metallic coatings. It was pointed out by Compton that the interpretation of the data obtained in these tests sometimes leads to a confusing picture of the efficacy of the particular protective coating. For instance, in many cases, excessive quantities of the corrosion products of the coating metal is fully as unsatisfactory as corrosion of the base metal itself. The performance of the coating is frequently recorded in terms of the time required for corrosion of the base metal to appear and the proportion of the surface so corroded. Thus, for many applications, it seems desirable to record both the effect on the coating material and the base metal in any given series of tests.

Surface reaction and vitreous coatings, in general, suffer from limited distensibility but do not offer very serious application problems. Oxide coatings on aluminum and vitreous enamels will withstand rather severe environmental conditions, but most of the others will not and are usually employed as an adjunct to some other type of finish.

Accelerated and normal exposure tests are also employed with the nonmetallic protective coatings with a frequent addition of exposure in so-called weathering machines. It has been the custom of most testing organizations to carry the test to complete failure of the coating and report the time required to achieve this failure. It was brought out by Compton that a better picture of the performance of materials can be obtained if certain physical tests are made during the progress of the exposure of the material. From the changes shown by these physical tests, valuable information as to the progress of deterioration may be obtained, frequently resulting in a considerable saving of testing effort.

A large number of physical tests and test methods have been developed for the evaluation of organic coatings. Most of these tests are for the purpose of obtaining information as to the hardness, distensibility, adherence, and resistance to scratching, impact, or abrasion; in addition, other specific tests may be required for certain applications. Thus, in general, to make the proper selection of a protective coating, it is necessary to know the environment to which the coating will



Doubles the work per hour

Runs Cool on Hottest Jobs

Unequalled for Semi-Automatics or Hand Polishing

Presto Contact Wheels

Carried in Stock in Four Different Densities

Number	Density	Recommended Usage
No. 50	Soft	For fine polishing
No. 60	Medium	For polishing and slight stock removal
No. 70	Hard	For semi-automatic polishing and medium stock removal
No. 90	Extra Hard	For heavy stock removal

Priced within reach of Every Polishing Room

Write for Literature

No More Fighting Clogged Emery Belts

Here is the contact wheel you've been wanting! Fast, uniform cutting from start to finish. Increased Production. Fewer Reworks and Fewer Rejects. Tests on actual production work show double the output per hour.

The design features of PRESTO Contact Wheels make these results possible. The tough synthetic rubber, furnished in four degrees of density, provides correct conformation for the most effective polishing.

Holes beneath the surface snap the belt as it leaves the work and beat it clean with 32 hammer blows per revolution of the wheel. *Induced air circulation keeps the wheel cool even on semi-automatic polishing.*

The rubber is vulcanized to the metal core. Each wheel is tested at 5600 rpm before shipment.

For fullest advantage in abrasive belt polishing use PRESTO Contact Wheels. Jobbers in Principal Cities

Visit Us in Booth 146 at the Metal Show—Oct. 18-24

DERSCHEID Co.

Street, Chicago 7, Illinois

Finishing Trade over 35 Years.

be exposed, whether it must withstand physical abuse, to what degree appearance factors must be considered, and also the degree to which cost enters as a controlling element. Thus, the finishing engineer, having the responsibility for the selection of protective coatings, should realize the importance of using the means that are available for determining the suitability of any given protective coating to a given environment and type of service.

* * *

Use of Limestone Beds to Neutralize Waste from Acid Dipping and Pickling Operations

FINISHING engineers interested in the problem of disposal of waste acids from plating and other finishing operations will be interested in the method described by A. L. Reidl of the General Electric Company, Philadelphia, in the July 1947 issue of "Chemical Engineering" wherein a unique system of upflow limestone beds is utilized. It is reported that the system effectively prepares the effluent for dumping into city sewers and eliminates the need for acid pumps. The installation has proved to be an effective and economical means of neutralizing the acid reacting wastes resulting from acid dipping and plating operations at General Electric's Philadelphia Works.

According to the report, limestone beds are advantageous for the treatment of acid reacting effluent because they are simple to construct and require little maintenance. However, it was pointed out that to avoid their being made ineffective by deposits of calcium sulfate on the limestone, formation of slime, sludge, or oil accumulation in the beds, they must of necessity be large in area and volume in relation to the quantity of effluent

ZINC PLATERS!

Cleanse & Purify your Zinc Solution with

McKeon's

Zinc-Brite

TRADE MARK REG'D.

Make your Zinc Bright

Information free—wire collect

Sulphur Products Co. Inc.

Greensburg 9, Pa.

You can't judge a book by its cover, but buyers are quick to judge and choose the product with a Pratt & Lambert finish.

PRATT & LAMBERT-INC.
Industrial Finishes
NEW YORK BUFFALO CHICAGO
FORT ERIE, ONT.

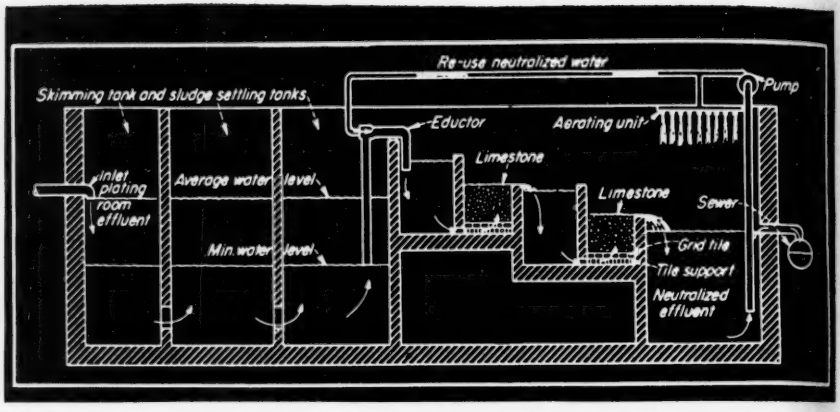


Fig. 2—Diagrammatic sketch of a system for processing acid waste using limestone beds *(Illustration courtesy "Chemical Engineering")*

discharged, since this arrangement assures complete neutralization of the mineral acids. The ultimate style and design of the limestone bed will depend on such factors as available space, depth of sewer arrangement, and whether gravity fall can be used.

Shown in Fig. 2 is a system designed to process approximately 200 g.p.m. of acid plating room wastes. A large concrete diluting and storage tank, divided into three separate chambers, receives the acid waste from the plating room. The first chamber acts as an accumulator for all oil, grease, and floating matter, while the second chamber accumulates all sludge and foreign material heavier than water. The suction line for the eductor is in the last chamber. From this tank, the effluent is syphoned into the neutralizing section by means of an eductor operated by water pressure, reusing the neutralizing water. Through an opening in the bottom of the separating wall this mixture of water and effluent flows, in an upward stream, through the limestone bed into the second compartment, and from there to the last compartment. The overflow of this compartment is connected to the sewer. The limestone crystals used in the beds vary in size between 2 and 3 mm. and have been found to be an economical medium for neutralizing. For best results, it was recommended that each bed be so constructed as to provide equal pressure and flow over the entire area without channeling.

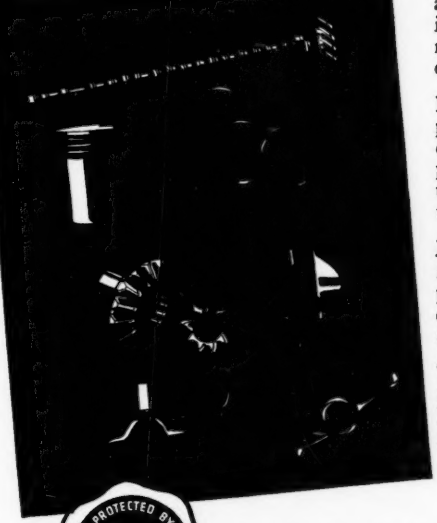
* * *

Activated Carbon Purification of Plating Solutions

KEEPING the equipment requirements for efficient carbon treating of plating solutions in mind when designing a new plating installation will pay operating dividends in good quality control and low operating costs. Such was the advice given to platers attending the 34th Annual Convention of the American Electroplaters' Society in Detroit by B. C. Case of the Hanson-Van Winkle Munning Company in discussing this particular phase of electroplating solution purification as part of a paper entitled "Modern Application of Electroplating Solution Purification." To carry out efficient carbon treatment, fast pumping and solution handling equipment should be provided. Suffici-

PARCO LUBRITE HOLDS OIL

Faster Break-in, No Scuffing or Scoring, Less Subsequent Wear



Parco Lubrite Coating, Magnified 100 times

Protection for wearing parts through the initial run-in period! Parco Lubrizing* is being used increasingly for this purpose. The coating is easily applied and is very effective, allowing faster, safer break-ins and minimizing the dangers of injury to expensive parts during this time.

Parco Lubrite's nonmetallic phosphate coating has a great affinity for oil, holds it through stresses and pressures, provides positive lubrication in operation. Metal-to-metal contact is avoided.

Many manufacturers today are using Parco Lubrizing on ring gears and pinions, crankshafts, clutch parts, cylinders, pistons, rings, valves, camshafts, pulleys, and universal joints.

To protect the wearing surfaces in the machine assemblies you build—Parco Lubrize! Write for full information today!

PROTECTED BY Parco Lubrite TO RETARD WEAR

PARKER RUST PROOF CO., 2172 E. Milwaukee Ave., Detroit 11, Mich.

*Parco Lubrite—Reg. U. S. Pat. Off.

BONDERIZING Holds Paint to Metal | PARKERIZING Inhibits Rust | PARCO LUBRIZING Retards Wear on Friction Surfaces

PARKER PRODUCTS CONQUER RUST

ent heating, proper agitation, and large drains to wash out tanks are time-savers. Large filters of good design will also save time.

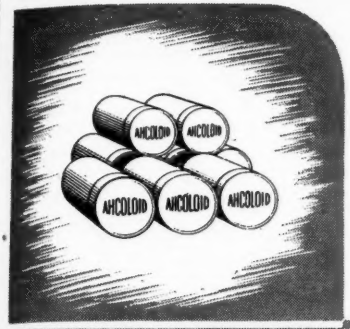
If the presence of organic impurities in a nickel solution is suspected, according to Case, a bent cathode or other plating test should be run in the laboratory to establish the presence or absence of metallic impurities. The metallic impurities should then be removed if found present. This will prevent an error in judgment as to the cause of the inferior deposits. A strippable deposit should then be produced and the ductility compared with a deposit from the same bath of known purity and performance. The fact was brought out by Case that organic contamination can produce other effects besides the loss of ductility in a nickel deposit. Lacy pitting, fine pitting in medium or high current density areas, black pits, laminated or spauling deposits, and possibly other defects have been attributed to organic impurities. Most of these troubles result from the more severe cases of organic contamination. Slight contamination from organic impurities may show up in cloudy deposits on medium or high current density areas with a loss of ductility. Still lower concentrations will not cause any visual change in the nickel deposit but even traces can be detected by changes in the ductility of the nickel deposits.

After the presence of organic impurities in the nickel plating solution has been established, time can usually be saved if a laboratory scale purification treatment is run and the quality of the deposit checked before the main bath is treated. The activated carbon should not be added directly to the plating bath to be treated, but, instead, the treatment should be carried out in a suitable storage and treating tank which should be equipped with heating coils and means of agitation. Agitation is important to obtain the most rapid purification by the carbon. A good filter of sufficient capacity is required.

After the amount of activated carbon to be used is determined, the plating solution should be transferred to the storage tank and heated to the operating temperature before the carbon is added. Solution agitation should accompany the addition of the carbon. To prevent the dry carbon from getting into the other plating baths or blowing all around the plating room, according to Case, it is usually advisable to make a slurry of the carbon in a small container before it is added to the plating bath. After the activated material is in the plating solution, one to three hours should elapse, during which time the temperature is controlled and agitation continued. Experience or the laboratory test previously conducted should determine the minimum time of contact between the carbon and the plating solution. If the

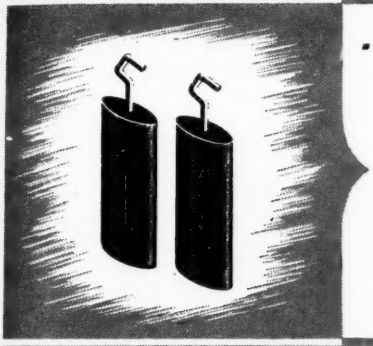
START RIGHT!
INSURE A PERFECT FINISH
DETROIT
Handy 'Tac' Rags
(Trade Mark Reg.)
Remove all Dust, Lint and Sand Particles from the Surface before Finishing.
Successfully used by leading Industrial Plants for over 11 years.
If your local Paint Dealer cannot supply you, write to Manufacturer.
Detro Sales Co.
414 NORTH SAN PEDRO ST.
LOS ANGELES 12, CALIFORNIA

These Products will save you money



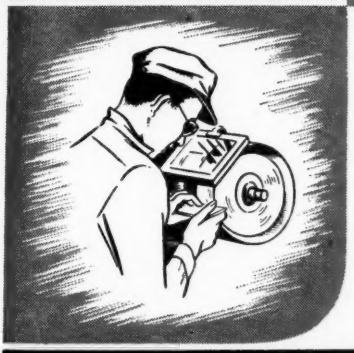
. . . in CLEANING

No matter what type of cleaning is called for . . . dirt, oil, grease, buffing residue, drawing compound, or neutralization of pickling acids . . . we can provide an AHCOLOID metal cleaner ideally suited to the job. These cleaners do a fast, thorough, low-cost job. Our careful laboratory controls assure uniformity in every shipment. This enables you to set up a standard cleaning procedure that will never have to be modified to compensate for variations in cleaner efficiency from shipment to shipment.



. . . in PLATING

NUCAST Nickel Anodes are more than 99% pure nickel. Because of their high efficiency they deposit thick, smooth layers of nickel on the work. They have no surface skin . . . start corroding the moment they are immersed in the plating solution. Once corrosion starts, it proceeds rapidly and uniformly until the anode is exhausted. Solutions last longer because there is no sludge formation. Metallic losses are extremely low . . . only 0.03%. Try some of these Nucast 99+% Nickel Anodes on your next job . . . make a direct comparison with any you now use.



. . . in BUFFING

Not only do you save money when you use AHCO Buffing Compositions, you actually make more money. The reason: you can buff more pieces between each application. And the higher your production, the greater your profit. We make a wide variety of buffing compositions, suitable for any range of work . . . steel, stainless steel, copper, brass, nickel, chromium. Or special compositions can be formulated to your own specifications.

APOTHECARIES HALL CO.

WATERBURY 88 CONN.

APOTHECARIES HALL COMPANY
WATERBURY CONNECTICUT
1849
98th Year

BOX B

filter is of sufficient capacity to hold all of the carbon used in the treatment, filtering can start immediately. If this is not true, then it is good practice to allow the carbon to settle and the plating solution should be drawn into the filter near the solution surface in the storage tank.

The fact was brought out by Case that unless suitable equipment is properly assembled and operated, keeping the carbon from getting through the filter is at times a troublesome problem. The use of filter aids and filter papers reduces the chances of carbon leaking through the filter. Thus, a continuous feeding of filter-aid during filtration or mixing filter-aid with the carbon when adding to the solution in the storage tank will allow the filter to hold much more carbon without loss in the rate of flow of the clean solution. One pound of filter-aid to 3 or 4 pounds of carbon is usually found to be entirely satisfactory.

FOR WOOD AND METAL FINISHES
Use Bright, Rich
HARDCOTE
One Hour Dry
• One coat covers to give your products a beautiful, full gloss finish that can really take it. Hardcote resists acids, alkalis, and weather. Easy to apply by brush, spray or dipping. Tack dries in 15 minutes, dries hard in one hour. Write for color card and information. Made only by
McDOUGALL-BUTLER CO., Inc.
6 Evans Street
Buffalo, New York

In severe or peculiar cases of organic contamination, according to Case, it has been found helpful to lower the pH of the nickel bath to approximately 2.0 before carbon treating. It appears that the adsorbing powers of the carbon toward certain organics are usually improved under these conditions. In other cases, the use of hydrogen peroxide during or before the addition of carbon has helped to destroy or remove stubborn organics, about 1 to 4 quarts of peroxide per 100 gallons of plating solution being the recommended quantity. If little is known about the type of organic material being encountered, according to Case, it may be advisable to use equal amounts of activated carbon and activated bentonite. As each of these materials are somewhat selective in their adsorbing powers, the use of the two together will ensure the removal of a wider variety of organic materials in one treatment.

The presence of organic impurities should always be assumed in making new bright nickel plating solutions, however, Case stated that it seldom becomes necessary to exceed one oz./gal. of activated carbon to obtain good purification. In the case of periodic purification treatments on operating solutions anywhere from ½ lb. per 100 gallons to 1 oz./gal. of activated carbon is used, depending on the severity of the contamination and the type of organic material. Carbon treatment is not restricted to nickel plating solutions alone, but has been used successfully on many kinds of plating solutions. The technique and equipment are substantially the same in all cases. If the type of plating solution is such that it can be used, in some instances it may be found advantageous to employ continuous activated carbon treatment. This treatment is carried out by carefully packing the filter used with the solution to be treated with activated material.

MICCRO Products

Used Throughout the Plating Industry

Developed and Manufactured by Experienced Platers

MICCROLOID . . . . corrosive-resistant coating for metal, wood, concrete
MICCROLAC . . . . mirror-finish lacquer for decorative plated metals
MICCROTAPE . . . . extruded tape for plating racks and selective plating
MICCROTUBE . . . . extruded tubing to protect straight or bent contact wires
MICCROTEX . . . . synthetic air-dry rack coating for all plating cycles
MICCROPLASTIC . . . . heat-cured chemically-resistant rack coating—cuts costs
MICCROMASK . . . . for masking machined parts prior to hard chrome plating
MICCROSTOP . . . . stop-off lacquer for all selective plating cycles
MICCROSTRIP . . . . for easy removal of stop-off lacquers and rack coatings

Samples and descriptive literature of all Miccro Products will be sent upon request.

MICHIGAN CHROME AND CHEMICAL COMPANY

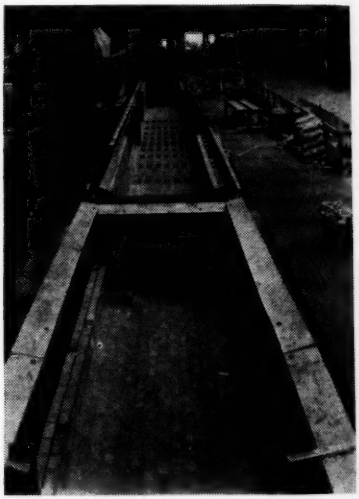
6340 E. Jefferson Avenue, Detroit 7, Michigan

Quality Plating Demands Consideration of Metal Distribution Factors

FROM the standpoint of producing quality electroplated finishes, it is important that proper consideration be given to metal distribution factors in plating operations. It is believed that too little emphasis is placed on the importance of this factor in both product design and selection of plate and specifications to be used in metal products utilizing plated finishes. Numerous researchers confirmed by experience has shown that the thickness of electroplated coatings is the most important single factor in their resistance to wear and corrosion. This property is most logically expressed in terms of minimum thickness on "significant" surfaces; that is, those areas that are visible and subject to abrasion and corrosion.

Some of the factors influencing metal distribution from plating baths and how they influence plating quality have been discussed by J. B. Mohler and H. J. Sedusky of the Cleveland Graphite Bronze Company in a recent issue of "The Iron Age" (July 17, 1947). In thinking of metal distribution from a plating solution, a bath is often described as having good or poor throwing power. Throwing power is usually thought of as the ability of the bath to distribute the metal to all parts of a complicated shape and particularly to plate in recesses. This characteristic of plating baths, which contributes so much to the concept of quality plating, is generally spoken of in the qualitative sense. As a general rule, the alkaline baths are said to be good in throwing power as compared to acid type baths. While there are methods available for measurement of throwing power, from the practical standpoint of quality plating it would be best to plate the metal product and

Men Who KNOW
Insist on
NUKEM TANKS



Because NUKEM Pickling Tanks have established a reputation over the years for dependable, trouble-free operation, they are preferred by operating men everywhere.

NUKEM Tanks are acid, wear and leak proof even under the most severe conditions. Many NUKEM Pickling Tanks have been in service for 10 to 15 years with no time down for repairs.

You will find our experience in acid proof construction extremely valuable. Let us submit recommendations on your construction.

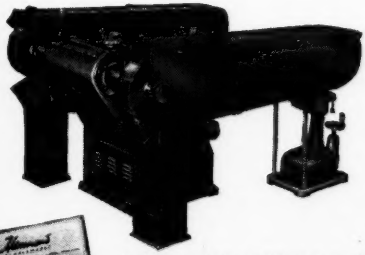
NUKEM Products CORPORATION
121 Colgate Ave., Buffalo 20, N.Y.

IS YOUR FINISHING ROOM STILL IN THE "GAY 90's"?

Hammond of KALAMAZOO

BACKSTANDS

Hundreds of plants, large and small, have materially stepped up finishing production by converting their wheel grinding and polishing equipment to high-production abrasive belt units with Hammond Backstands. Modernize your finishing department this quick, easy economical way. Write today for literature!



WRITE FOR CATALOG 55
Shows Hammond Backstands, Polishing Lathes, Abrasive Belt and Automatic Finishing Machinery. Write today!

Hammond Machinery Builders INC.

1622 DOUGLAS AVENUE • KALAMAZOO 54, MICHIGAN

measure the plate thickness at important outstanding points and recesses on the piece. Then, by experimentation, an arrangement might be found that would produce more favorable metal distribution.

If an article requiring a plated finish contains a deep recess, it may be difficult to deposit metal in the bottom of this recess. Thus, if such an article can be covered completely, the bath is said to have good covering power. Covering power may be measured by setting up a standard test, and it may be expressed as the minimum current density at which plating takes place. It is desirable to know the necessary minimum current density for plating to take place. Thus, for a minimum current density obtained in an area difficult to reach, some much greater current density will be obtained in raised areas. The quantity here may be prohibitive; the important point from the standpoint of quality plating is that the bath in its particular condition may not be capable of plating satisfactorily at the highest and lowest current densities obtained.

One important fact brought out by Mohler and Sedusky in their presentation is that a knowledge of the qualitative laws of metal distribution is not sufficient for the solution of plating problems of this type, which are so necessary to quality plating. The behavior of the particular bath to be used must be known. It should be recognized that the metal may distribute to all areas of a piece but the plating will only be satisfactory within a range of current densities.

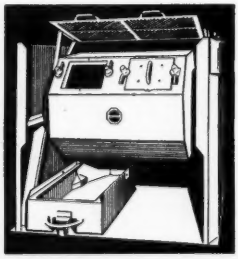
Quality plating involves the operation of baths within certain specified limits with reference to the concentration of chemicals making up the solution. In addition, the anode and cathode current densities are kept within limits, and impurities entering the bath are kept below certain objectional levels. Thus, when all the important variables are controlled, the baths will produce a satisfactory deposit over a certain range of current densities. Plating range then is an important fundamental characteristic of a plating bath and it may depend on the metal being plated or the bath being used. One widely used test plating cell for the measurement of plating range is the Hull Cell. The Hull Cell test utilizes an inclined cathode to provide a different current density at every point along the cathode. Many baths are controlled in production plating to a great extent by plating range tests.

For a particular application, a wide plating range may or may not be required to provide satisfactory metal distribution. However, if a wide plating range is desired to produce satisfactory metal distribution on the type of article being plated, then there may be a choice of baths; thus, an acid type bath or an alkaline type bath

ROTO-FINISH!

PARTS MECHANICALLY
CUT LABOR COSTS

Produce semi-lustrous finish on stampings, machined parts, die castings, forgings, extrusions for automotive, building, plumbing, appliance, general hardware, fishing tackle, tools, business machines.



Saves Time!

ROTO FINISH

The Sturgis Products Co.
435 Jacob Street
STURGIS, MICHIGAN

Beautiful, like polished ebony,

these zinc door handles were processed in Enthone EBONOL-Z. This simple, one-dip method imparts to zinc base diecastings and zinc plated parts a rich, adherent black with good weathering qualities.

Parts need only be cleaned and then treated for a few minutes in a warm solution of EBONOL-Z. Material cost is one-half cent per square foot of area coated—

CHEAPER THAN PLATING OR PAINTING.

Now used for finishing typewriters, business machines, toys, cameras, radios, buttons, buckles, name plates, etc. Samples processed in our laboratory and detailed procedure supplied.

Other Ebonol Processes

Ebonol-S for Steel and Ebonol-C for Copper and Brass.

may be used to deposit tin. If a particular bath is required, then the plating results obtained are limited to the range of that bath, and, as emphasized by Mohler and Sedusky, it may be necessary to carefully control the bath by analysis and plating tests to ensure the optimum operating current density range.

* * *

Surface Active Agents May Improve Efficiency of Alkaline Cleaning and Acid Etching

ACCORDING to data presented by O. M. Morgan, Allied Chemical and Dye Corporation, Buffalo, in "The Monthly Review" (April 1947), the use of surface active agents with alkaline cleaners may make possible the removal of traces of oil which might be left on work in ordinary alkaline cleaning processes. Among surface active agents, it was reported that synthetic detergents are more useful than wetting agents since they afford the cleansing bath a longer life and may be used in very low concentrations. The specific surface active agent studied by Morgan is known by the trademark Nacconol NR and consists of alkyl aryl sulfonates having a long alkyl chain. It was ponted out that most surface active agents which are stable under cleaning bath conditions are beneficial in varying degrees in metal cleaning processes. It was also reported that surface active agents promote uniformity in the acid etching of metals.

Alkalis are highly reactive chemically and may clean metals by saponifying the surface oils. The cleaning action may also be associated with their ability to disperse water-insoluble oils. It was also pointed out by Morgan that the cleaning action of acids on metals is largely caused by their ability to etch the metal surface or to dissolve oxide films. It should be recognized that acids have little or no emulsifying properties, and, therefore, if a cleaning action is required in acid solutions, means must be found to impart some emulsifing properties.

The experimental procedure upon which Morgan's recommendations were based consisted of cleaning panels which had been precoated with oil, followed by an examination of the cleaned panel under ultraviolet light. It was reported that the improved laboratory results obtained in cleaning with cleaners containing surface active agents have been correlated with and confirmed in plant practice in a large number of commercial establishments. It was also pointed out that surface active agents showing activity and stability in acid solutions are valuable in the acid etching of metals such as iron, steel, and brass to promote more uniform attack of the metal surface.

FELT DOES IT BETTER

Paramount Brand

FELT WHEELS

• Quality • Better Work • Uniformity

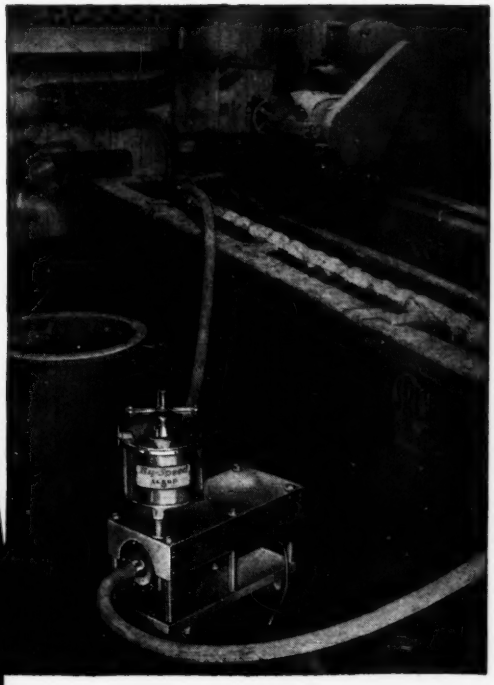
Order PARAMOUNT BRAND Felt Wheels from your supplier. Also, bobs and sheets whenever you need them.

BACON FELT CO. WINCHESTER, MASS.

Established 1824

"America's Oldest Felt Manufacturer"

The FILTER that Plating Shop Men Are Buying... ...ON ITS REPUTATION



Outstanding for protection against pitting, spotting, poor adhesion, formation of nodules, etc., which mean rejects and reworking, *"Sealed-Disc"* Filters have won high reputation in plating rooms large and small all over the world.

You too, can take advantage of the savings in time and labor by using an Alsop *"Sealed-Disc"* Filter in your plant.

"Sealed-Disc" Filters remove all traces of dirt, dust, oil, sludge and all other impurities from plating solutions. They are light, compact, portable and easy to move from one tank to another for instant use.

Our new catalog gives you all the facts.

The Alsop Engineering Corporation, 210 Keen Street, Milldale, Connecticut.

Send For this New Catalog

Write for your copy of P-347 which tells exactly, how, why and where *"Sealed-Disc"* Filters can help you get finer finished plated work from your plating solutions.

ALSOP ENGINEERING CORPORATION

Filters, Filter Discs, Pumps, Tanks, Mixers, Agitators

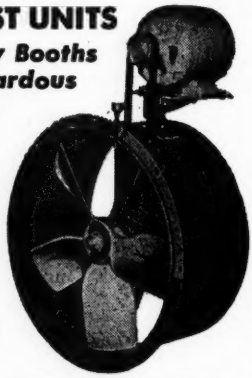
Aluminum Surface Preparation for Organic Finishing

ORGANIC finishes are often desirable on aluminum and its alloys. Economy, ease of application, and preservation of the metal are advantages claimed for finishes of this type. Like heavier metals, however, aluminum may require one or more of the following types of finishes for many applications, a resistant finish to protect it from acids, alkalies or other corrosive chemicals; a protective finish to prevent discoloration by the atmosphere; and a decorative finish to enhance the beauty of the article that is formed. Since many objects of aluminum may require an organic protective coating combining one or more of the above properties, the best finishing system and, in general, the method of application is the one most suited to the shape, size, and ultimate use of the manufactured article.

EXHAUST UNITS
for Spray Booths and Hazardous Locations

Fan Sizes
12" to 42"

Free
Delivery
C. F. M.
900 to 29200



Immediate Deliveries from Stock.

Also Manufacturers of a complete line of waterwash and dry type paint spray booths with accessories. *Send for details.*

M. & E. Manufacturing Co.
2571 Winthrop Ave.
Indianapolis • Indiana

Aluminum has a high affinity for oxygen; an oxide film is formed on exposure of aluminum to the atmosphere, the film preventing further attack unless it is removed or penetrated by chemical or mechanical means. Most of the aluminum used in industry today is in the form of alloys which differ greatly in physical and chemical properties. The many and varied uses to which these alloys are put require, in many cases, some type of organic finish for protection and decoration of the surface. These finishes must be durable under the conditions to which they are subjected, retain a pleasing appearance, and protect the base metal from corrosion.

Numerous methods can be used to prepare an aluminum surface to receive a paint or enamel coating. The selection of the method used is governed by the service intended for the finished article. In any case, the surface of the aluminum work must be clean and free from dirt, grease, and oils if satisfactory adhesion of any organic coating is to be obtained. Surface roughening by sand blasting, scratch brushing, or caustic etching has been used to prepare aluminum surfaces for a paint or lacquer coating. Such procedures are not recommended since it has been reported that surface roughening impairs the natural oxide protective film present on the aluminum (see also "Product Engineering," Nov. 1946).

In general, it can be said that chemical and electrochemical surface conversion processes are considered the most satisfactory methods for preparing the surface of aluminum as a good base of an organic coating. Surface conversion coatings, formed by chemically converting the metallic surface, have as their main objective the formation of a stable and non-reactive coating, integral with the base metal, which inhibits corrosion and increases the adherence of applied organic fin-

RUBBER COATED PRODUCTS

RUBBERIZED INDUSTRIAL EQUIPMENT AND PRODUCTION PARTS

MAC DERMID INCORPORATED is New England Distributor for ARCO Grids, Air Agitation Systems, Drums, Anode Baskets and other Metal Finishing units insulated with seamless natural rubber to provide lasting protection against corrosion from acids, alkalis, and other chemical sources.

MAC DERMID INCORPORATED *Compounds*

PROMOTE EFFICIENCY, ECONOMY, SATISFACTION

Our 25 years of specialized development in formulating superior Metal Finishing Compounds for you individual needs promote Efficiency. . . Economy . . . Satisfaction.

COMPLETE SUPPLIERS TO THE METAL FINISHING INDUSTRY

MAC DERMID INCORPORATED
Dept. L, Waterbury 88, Conn.

Gentlemen: Please have your Representative call regarding ( ) ARCO Equipment
( ) MAC DERMID INCORPORATED Compounds.

Name ..... Title .....

Firm Name .....

City ..... State .....

MAC DERMID
★ *Incorporated* ★
WATERBURY 88, CONNECTICUT

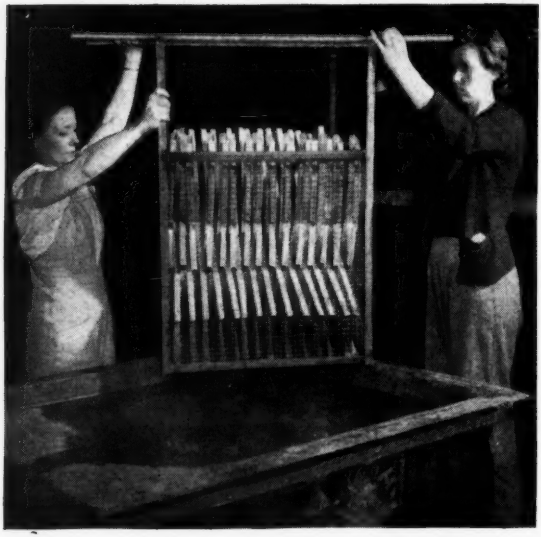


Fig. 3—Chemical treatment bath for formed aluminum parts (*Photo courtesy Reynolds Metals Co., Inc., Louisville 1, Ky.*)

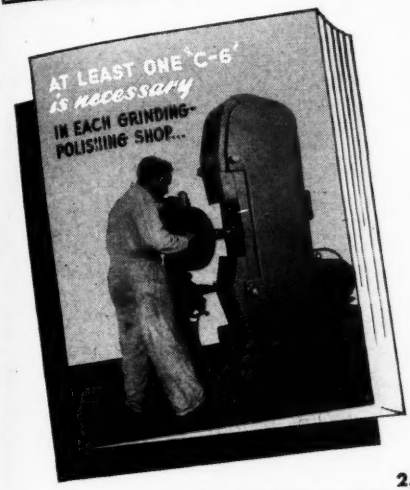
ishes. The common methods of converting aluminum surfaces are acid etching, treatment with phosphoric acid-organic solvent mixtures, production of a chemical oxide coating, production of an electrochemical oxide coating, and formation of phosphate coatings (see also "Industrial and Engineering Chemistry," Dec. 1946).

Acid etching treatments may consist of immersion of the aluminum in phosphoric or chromic acid subsequent to cleaning. The process is sometimes referred to as chromodizing when chromic acid is used. Thus, films of aluminum phosphate or a chromium-containing compound are supposedly formed. The phosphoric acid-organic solvent mixture is a surface preparation made up of an aqueous solution of phosphoric acid with organic grease solvents and emulsifiers. The mixture is usually applied by the brush or dip method and probably forms a thin film of aluminum phosphate on the surface of the metal (U. S. Army Corps of Engineers Specification T-1184-D). The chemical oxide method is illustrated by a two-step process in which the aluminum is immersed in a hot solution containing sodium carbonate and chromate, as shown in Fig. 3, followed by a water rinse and then a sealing treatment in hot potassium dichromate solution. The electrochemical oxide coating is formed by an anodic treatment using, as electrolytes, aqueous solutions of acids, such as sulfuric, chromic, boric, or oxalic. The Aluminum Company of America has taken an active part in developing surface treatments for aluminum, two typical ones being known in the trade by the names Alrok and Alumilite processes.

One recently developed surface coating method of the phosphate type consists in reacting the aluminum surface in a metal acid-phosphate solution containing oxidizing agents and a complex fluoride for accelerating the coating action (see also The Electrochemical Society Preprint 91-1). The metal surface is converted to a finely crystalline, non-metallic phosphate coating of the proper texture, adapted to inhibit corrosion and increase the adherence of any applied paint film. In general, the phosphate coating process for aluminum may be carried out by the immersion or spray method using the same type of equipment and with similar cleaning and rinsing cycles as is used for processing steel and zinc alloys.

The aluminum surface is converted to the phosphate coating by immer-

Make More Money from Your Grinding-Polishing Jobs



This FREE Booklet

on the New PORTER-CABLE C-6 Belt GRINDER - POLISHER

tells how you can

1. Reduce polishing time 30% to 50%.
2. Reduce other labor costs.
3. Improve quality and finish of your work.
4. Reduce operator fatigue.
5. Do straight, flat, contour, soft buff and many other operations with the profitable abrasive belt method.

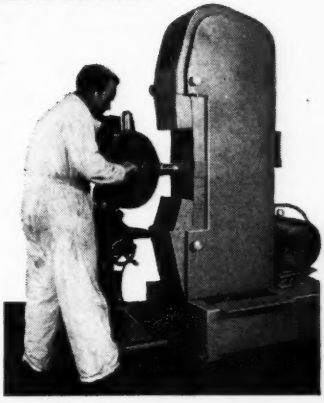
It also tells:

WHY the C-6 Gives You These and Other Advantages

• **The Resilient Contact Roll**—It is *not* a drive pulley . . . merely backs up abrasive belt. Does not lose its shape because belt does the cutting. Its resiliency prevents chatter. Heat is reduced to a minimum . . . work is not discolored, disfigured or distorted.

• Abrasive Belt—Since it is factory-made, it is evenly loaded . . . has no "piled-up" grains to cut deep scratches. Cutting grits are full exposed to permit faster cutting without strain of "laying-on." Does not require costly loading of set-up wheels. Its unusual length—148"—insures cooler operation.

• **The C-6 is a Compact, Complete Portable Unit**—Does contour, straight, flat grinding . . . soft buffing . . . all kinds of grinding and polishing operations. Easily moved. Requires only little space—26" x 38". Fully guarded.



Read how the C-6 actually increases profits!
Write for FREE booklet "C-6" today!

PORTER-CABLE MACHINE CO.

302-10 WOLF ST., SYRACUSE 8, N. Y.

sion in the processing solution for 30 seconds to 4 minutes at 70-185 deg. F. The processing time depends upon such factors as the type of aluminum alloy being treated and surface pretreatment required. The excess coating chemicals are removed by a cold water rinse lasting 20-60 seconds. A final rinse of the coating in a 0.05 per cent solution of chromic acid or phosphoric-chromic acid mixture, followed by a dry-off stage, completes the cycle of preparing the metal surface for all types of paint.

In the finishing of aluminum, as with other metals, the value of any protective painting system depends to a large extent on the choice of a primer. The primer should have good resistance to moisture penetration; should adhere well to the aluminum surface; should provide a good base for the second coat; and should contain an inhibitive pigment for the prevention of surface reaction. Zinc chromate possesses corrosion-inhibiting properties and is recommended in priming paints for aluminum surfaces. Lead pigmented primers are not recommended for use on aluminum.

Enthone "Hydrex," a water displacing liquid for drying metals, including plated work, jewelry, and steel, is the subject of literature now available free from Enthone, Inc., Dept. PF, 442 Elm St., New Haven 2, Connecticut.

"Mounted Wheels and Related Abrasive Products" is the title of a 32-page illustrated handbook published by The Carborundum Co., Niagara Falls, N. Y. A wide range of wheel shapes and sizes, a variety of abrasives and coated abrasive discs, sleeves and cartridge rolls available for use on lightweight high speed portable grinders are discussed and depicted. Photographs and diagrams are provided to assist correct identification and selection, to illustrate careful handling and storage, and to show proper and efficient applications. Copy free.

THESE INDUSTRIAL RUBBER GLOVES ARE

Rough and Tough!

SURETY SURESEAL . . . . SUPER RESISTANT SYNTHETIC

WITH THE NEW GRIPTITE FINISH

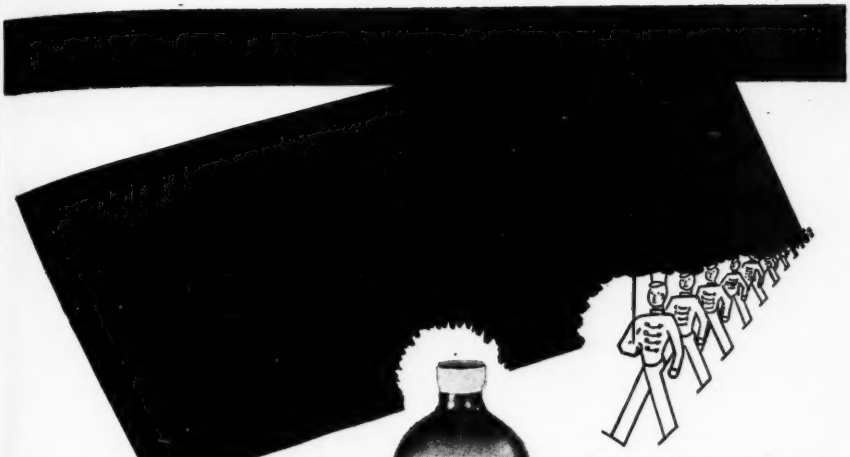
MORE SAFETY • Griptite means no *slips*. And this exclusive rough-surface finish won't peel or wear off.

MORE ECONOMY • Laboratory tests prove Sureseal synthetic outwears natural rubber 10 to 1! Four times harder to snag!

MORE RESISTANCE • Maximum resistance to acids, chemicals, oils, solvents, etc. Write for descriptive folder.

THE SURETY RUBBER CO.

CARROLLTON, OHIO



POTASSIUM GOLD CYANIDE SALTS — (41%, 46%, 50% and 67.5% Troy or Avoirdupois. Bottled in quantities desired.

Liquid Gold Plating Concentrates—100% gold content. Complete line in a variety of colors for all specific needs. Sold by Troy weight.

- 24K LIQUID GOLD CONCENTRATE — Used for Flashing and Coloring.
- SPX #3 LIQUID GOLD UNDERCOAT—Used as undercoat on brass, copper, silver and soft soldered work.
- SPX #5 LIQUID PINK GOLD —Provides uniform pink finish.
- POTASSIUM GOLD CYANIDE SALTS—(41%, 46%, 50% and 67.5% gold content)

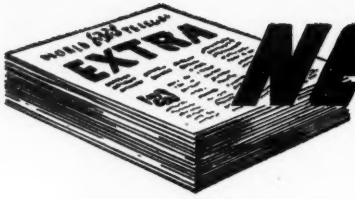
Many new shades to meet changing styles are available.

- RHODIUM SOLUTIONS — We distribute Johnson-Mathey Rhodium Solutions that provide an excellent, long-lasting white finish at low unit cost.

RHODIUM SOLUTIONS — We distribute the internationally known Johnson-Mathey Rhodium—a precious metal of the platinum group that deposits a brilliant white lasting finish at low cost.

• Robinson's aggressive, pioneering research through the years, accounts for today's success. It was this same aggressiveness back in 1936, that brought forward the first "standardized" Liquid Gold Plating Concentrate *in a bottle*. Its immediate acceptance by industry is history. Today, Robinson's certified products still *lead the way*—compounded only from U. S. Government Treasury Gold and the highest quality Chemicals.

Feel free to write—your inquiries become our immediate concern! Ask for our booklet, "Precious Metal Plating"—it's FREE!



NEWS of the Industry

Michigan Buff Occupies New Plant

According to an announcement made by A. W. Payson, owner, the Michigan Buff Company, Inc., has moved to a new plant at 3503 Gaylord Avenue, Detroit 12, Michigan. Modern in all respects, the plant is air conditioned throughout both the offices and warehouse.

Established in 1929, the company handles new and used buffs, polishing wheels, and polishing equipment, as well as polishing wheel cement, abrasive of all kinds, buffing compound, glue, and other items pertaining to polishing and buffing. Also jobbers and distributors for many large manufacturers, the company has a branch office and warehouse in Chicago, Illinois.

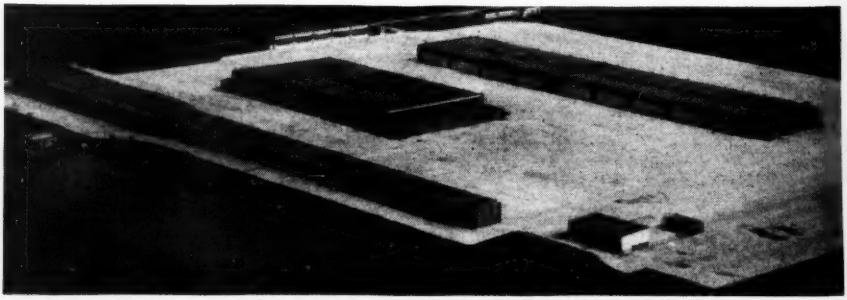
Carborundum Purchases Part of Plancor 168

The Carborundum Company has received from the New York office of the War Assets Administration preliminary notification that its bid of $1,000,000 for a part of Plancor 168, formerly operated by Bell Aircraft Corporation, has been accepted. The property sold to The Carborundum Company comprises approximately 65 acres and is located at the northeast corner of the original Bell property fronting on Walmore Road. Included in the purchase are four buildings, one 825 x 144 feet, one 463 x 200 feet, one 1,131 x 50 feet, and one 200 x 40 feet, a total floor area of 290,000 square feet. A large portion of the free area surrounding the well-spaced buildings is paved with 8-inch concrete.

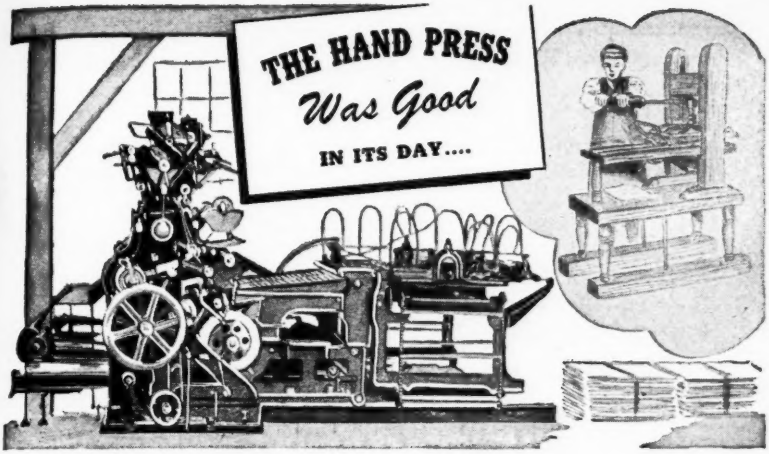
This property has been acquired primarily as manufacturing space for the coated products division of The Carborundum Company. Extensive renovation is planned to start immediately in conformity with engineering programs already completed.

Removes Head Offices

The Sarco Company, Inc., manufacturer of steam traps, strainers, temperature regulators, and heating specialties, announces the removal of its head offices, effective September 1, 1947, to the Empire State Building, New York 1, New York.



Portion of Plancor 168 purchased by The Carborundum Company



BUT . . .

. . . Today's giant high-speed, automatic marvels have left it far behind. As in printing progress, so it is in the field of metal cleaning and conditioning.

Duridizing With

Duridine*

is the modern method for cleaning and conditioning metal surfaces — removing oil, grease and other undesirable soil.
DURIDINE also phosphatizes — creates a durable bond for inorganic finishes by changing the metallic surface into a non-conductive phosphate film of uniform crystalline texture.

DURIDINE is best used in power spray washers of mild steel construction. The process is simple, requires little special training—no exacting technique in the use of the single chemical "DURIDINE."
For lasting protection of painted sheet-metal products—DURIDIZE!

CHEMICALS
ACP
PROCESSES

RUST PROOFING AND PAINT BONDING

Granodine *
Duridine *
Alkadine *
Lithoform *
Thermoil-Granodine *

RUST REMOVING AND PREVENTING

Deoxidine *
Peroline *

PICKLING ACID INHIBITORS

Rodine * ®

AMERICAN CHEMICAL PAINT CO.
AMBLER ACP **PENNA.**

Interchemical Opens New England Sales Branch

J. G. Morris, president of the Finishes Division, Interchemical Corporation, announces the establishmment of a New England sales branch for the company's industrial products, with offices located at 10 North Main Street, West Hartford, Conn. This new branch will operate under the direction of Robert K. Hungerford as New England sales manager, with five veteran representatives serving customers throughout the northeastern states.

Robert K. Hungerford

Mr. Hungerford, who has spent 22 years in the industrial finishes field, began his career with Roxalin Flexible Finishes, now a part of Interchemical Corporation, in 1925 as a salesman in the State of Connecticut. His sales force consists of the following well-known industrial finishing salesmen whose individual experience in the field averages well over 18 years: Stanley S. Raymond, Richard A. Engel, Henry E. Bauer, Richard J. Franz, and William H. Robinson.

Appointed Michigan Representative for Amercoat

Spray-Coat Engineers, Inc., has been appointed Michigan representative for the Amercoat Plastic Coating Division of the American Pipe and Construction Company. J. H. Lo Prete, formerly chief chemist with the Wolverine Tube Division of the Calumet and Hecla Copper Company, is president of Spray-Coat Engineers and supervisor of tank lining problems. J. W. Croes, a Wayne University chemistry graduate, has been placed in charge of Amercoat plastic coating problems of the food industry for the State of Michigan.

A new plant established by Spray-Coat Engineers at 8711 West Chicago Boulevard is equipped for handling all plastic coating operations.

Becomes Pennsalt Supervisor of Development

Dr. Ford R. Lowdermilk has been appointed supervisor of the Development Division in the Research and Development Department of the Pennsylvania Salt Manufacturing Company. Dr. Lowdermilk replaces Frank R. Murphy, who was recently appointed assistant production manager in Pennsalt's Manufacturing Department. Before joining Pennsalt, Dr. Lowdermilk was associated with the Barrett Division of the Allied Chemical and Dye Corporation in the Research and Development Department, and was a technical assistant to the chief chemical engineer.

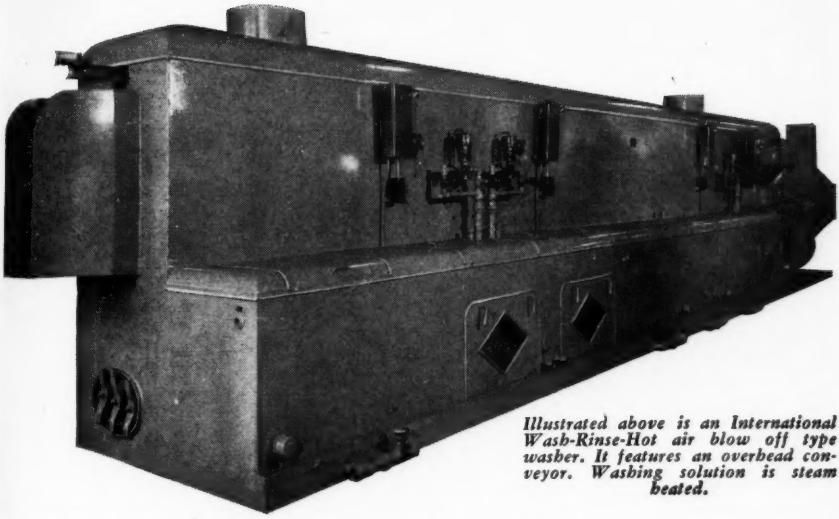
A member of the American Chemical Society and the Institute of Chemical Engineers, Dr. Lowdermilk received his bachelor of science degree from the University of Arkansas and his master of science degree from Emory University. He also received a degree of doctor of philosophy from Pennsylvania University.

Trickler Appointed General Sales Manager

The New York Blower Company announces the appointment of Earl E. Trickler as general sales manager to fill the vacancy caused by the death of Henry Mathis, vice president, on July 18. Mr. Trickler received his degree in mechanical engineering from Syracuse University in 1922 and is a member of the ASH&VE. After a varied experience in engineering and sales work, he joined the New York Blower Company in 1934. Later he took a leave of absence to practice privately as a consulting engineer, returning to New York Blower after several years.

Earl E. Trickler

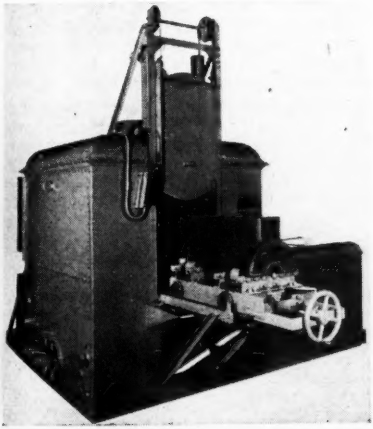
Mr. Trickler, as well as having charge of sales, will continue as chief engineer to superintend all engineering developments of the company.



Illustrated above is an International Wash-Rinse-Hot air blow off type washer. It features an overhead conveyor. Washing solution is steam heated.

INTERNATIONAL BUILDS INDUSTRIAL WASHERS

For Every Type of Business!



International Cylinder Block Precision Type Washer. Equipped with timing device to insure correct elapsed time for washing and rinsing.

Efficient design coupled with the excellent construction features embodied in International Washers make them outstanding, dependable and profitable production units. Among the features are rugged pressure pump; removable dirt catching screens for quick, easy cleaning; solution tank storage capacity from 2 to 3 times volume pumped per minute; full range of conveyors; choice of corrosion resistant spray nozzles — from mist to open stream; proper location of nozzles; welded fittings for all water, steam or gas and drain connections. Also specialize in building Bonderite Units.

Write for folder. Recommendations and quotations promptly supplied.

INTERNATIONAL CONVEYOR & WASHER CORP.
652 E. FORT STREET • DETROIT 26, MICHIGAN

Cowles technical men in the Metal Cleaner Department who attended metal cleaning clinic recently conducted by The Cowles Detergent Company

Cowles Detergent Conducts Metal Cleaning Clinic

The Cowles Detergent Company has been conducting a series of salesmen's clinics for Cowles technical men at the home office and laboratories in Cleveland, Ohio. The accompanying illustration shows one of the groups comprising men in the Metal Cleaner Department. Standing from left to right are Clarence Ozar, manager of the Metal Cleaner Service Laboratory; Clyde Lowe, technical man; C. C. Bassett, vice president and director of sales; Gene Garman, technical man; E. F. Clark, manager of the Metal Cleaner Department; Charles Churchill, technical man; and Harold Fulton, technical man. Seated are Jack Dobson, technical man; M. P. Boland, metal cleaner research staff; and F. H. Hitchcock, technical man. Dr. C. F. MacMullen, the company's technical director, also attended the clinic.

The clinic concluded the company's postwar refresher program for all members of the Metal Cleaner Department. All phases of metal finishing and cleaning were covered in detail and each Cowles representative returns to his territory well equipped to handle current problems in the field.

New Office and Warehouse for H-VW-M

The Hanson-Van Winkle-Munning Co., Matawan, N. J., announces the completion of a new Stratford, Connecticut office and warehouse at 382 Seymour Street. This building is a steel, concrete, and brick structure of modern construction, one and two stories in height with a total floor space of 6,640 square feet. Its purpose is to provide a stock of electroplating and polishing supplies and equipment for quick service and delivery to customers in New England.

Offices have been provided in this building for the company's Connecticut representatives, George C. Knecht and Robert E. Creamer, as well as for Walter J. Jurman, who serves as the warehouse manager.

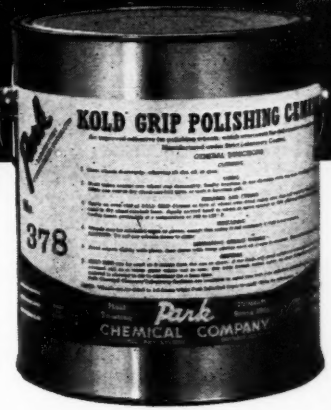
New Stratford, Connecticut warehouse and office of Hanson-Van Winkle-Munning Company

CUT FASTER, LAST LONGER

Park

KOLD-GRIP

POLISHING WHEEL CEMENT



PARK KOLD-GRIP POLISHING WHEEL CEMENT really "shines" on product finishing and polishing operations. A perfect binder for setting up any size wheel, it gives you faster cutting action, longer wheel life and greater all around economy than less effective glue. Ideal, too, for cementing wheel sections together and re-coating abrasive belts.

Manufactured under rigid laboratory control to assure uniformity of quality, PARK KOLD-GRIP POLISHING WHEEL CEMENT is available in 11 different grades . . . strong, hard cements for roughing to fine, flexible cements for finishing. Write today for complete details and prices.

Meet us at National Exposition, Booth 634

Park

CHEMICAL COMPANY
8074 Military
Detroit 4, Mich.

Expansion Plans Announced

According to T. Curtis McKenzie, president, the recent incorporation of the Klem Chemical Works with the new name of Klem Chemicals Incorporated is the first step in expansion plans necessary to accommodate increased demands for the company's chemicals and industrial cleaners. Plant expansion is already underway and, when completed, will provide more than double the present manufacturing capacity.

T. Curtis McKenzie

General offices of the firm will remain in the plant located at 14401 Lanson Avenue, Dearborn, Michigan. Sales offices and warehouse stocks are now maintained in many of the principal cities of the East and Middle West. Expansion plans call for additional offices in all major manufacturing centers of the nation.

Mr. McKenzie is a member of the Society of Plastic Engineers, American Electroplaters' Society, and American Society for Metals.

A.E.S. Convention Committee Meets

The first regular meeting of the convention committee of the Newark Branch for the 34th Annual A.E.S. Convention which is scheduled to be held at the Ambassador Hotel in Atlantic City, New Jersey, on June 28, 29, 30 and July 1, 1948 was called to order on September 9 by the general chairman, Horace M. Smith. Under the leadership of Mr. Smith, the following chairmen of the various committees were appointed: George Wagner, finance; Myron Diggin, educational; Louis Donroe, committee for branch exhibits; Paul A. Oldam, program and entertainment; John Gumm, registration; George Reuter, banquet; and William F. Bruhns, publicity.

Mrs. Regina Munning has consented to head the committee to entertain the ladies. As her co-workers, she has chosen Mrs. Catherine Smith, co-chairman, and Mrs. Jenny Wagner, secretary.

Bayer Promoted to Sales Manager

The Special Chemicals Co., New York, announces the promotion of Walter R. Bayer to the position of sales manager. Prior to joining the company, Mr. Bayer was associated with the Electrochemicals Department of E. I. du Pont de Nemours and Co., Inc. for a period of 21 years.

The company also announces that Ralph A. Heiss has joined Special Chemicals as a sales representative. Previously, Mr. Heiss was associated with the Process Control Department of the Electroplating Division of Westinghouse Electric Manufacturing Co., Belleville, N. J. Later, he was employed as a plating and finishing foreman for Air Associates, Teeterboro, New Jersey.

Sherwin-Williams Opens Great Lakes Industrial Division

A complete finishing service for manufacturers in the Great Lakes area will be available through the new Sherwin-Williams Great Lakes Industrial Division which was opened in Grand Rapids, Michigan, September 1. Frank E. Ehrett, Western Michigan representative since 1936, has been appointed manager. General offices of the new division will be at 112-118 South Division Avenue, Grand Rapids.

Frank E. Ehrett

Manufacturers in the area will be serviced by a well-trained staff which has been increased to handle all types of finishing needs. A "field laboratory" which has been located in Grand Rapids for the last three years has been expanded to facilitate the complete engineered finishing service offered. Color styling, planning, and engineering assistance on all finishing problems will be available. Development and service work will cover all branches of the finishing industry, including metal, wood, and plastic products.

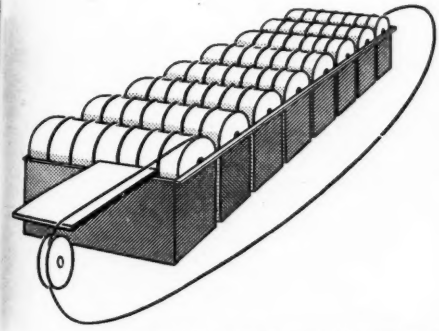
Another FIRST From KOCH!

GYRA-FLOW

The Complete Continuous Finishing System That

- CLEANS
- RINSES
- DRIES
- DIPS
- SPRAYS
- BAKES

In One Uninterrupted Cycle!



A spirally condensed steel ribbon conveyor carries the work through 2 to 20 processes — timed for high production. Regulated to supply fully finished parts at the rate you require.

Designed, built and installed by KOCH engineers to solve your specific finishing problem. Shipped in individual units ready to install.

Visit Our Display at
The National Metals Exposition,
International Amphitheatre, Chicago,
Booth 2816

PHONE, WIRE or WRITE TODAY FOR COMPLETE DETAILS!

GEORGE KOCH SONS, Inc.

INDUSTRIAL EQUIPMENT

EVANSVILLE, INDIANA, U. S. A.

Sales offices in leading industrial centers:

NEW YORK
William Printz Co.
358 Fifth Ave.

★

CHICAGO
Koch Indust. Equip., Inc.
53 W. Jackson Blvd.

★

LOS ANGELES
Industrial Systems Co.
341 S. Central Ave.

Nankervis Opens Branch Office

A. Gordon Spencer

The George L. Nankervis Co., Detroit, Mich., designer and engineer of complete metal-finishing equipment, announces the opening of a branch office to service the Saginaw Valley district. A. Gordon Spencer, who is well known in the metal-finishing industry and who has resigned his position as chief metallurgist at the Chevrolet-Flint Division of General Motors Corp., will have charge of the office.

Sales Aid Made Available to Distributors

The Baughn Chemical Products Co., Chicago, Ill., processor of Crystal Tack Rags, has recently made available to distributors and jobbers a valuable sales aid in the form of a two-color catalog sheet setting forth the important features of its products and punched to fit every type of catalog and counter book. The company announces that, in spite of increasing material and labor costs, it has been able to effect a recent downward price revision for Crystal Tack Rags as a result of increasing volume and improved production facilities.

Burdett Promotes Pair

The Burdett Manufacturing Company, Chicago, manufacturer of infra-red burners for baking, drying, and similar heat processing, announces the promotion of Donald C. Scheele to general and sales manager and Robert B. McCormick to treasurer. Mr. Scheele has been an engineer with Burdett for 9 years and is a graduate of the University of Illinois, where he majored in combustion engineering, receiving a B.S. degree in mechanical engineering.

Mr. McCormick similarly advanced through the ranks of the organization and is a grandson of the late founder, J. B. Burdett, a pioneer in industrial heat treating.

J. H. Chopa Named Manager

Berry Brothers, Inc., Detroit, manufacturer of paints, varnishes, enamels, and lacquers, announces the appointment of Jerome H. Chopa as manager of its Chicago Division. Mr. Chopa has sold Berry Brothers trade sales and industrial products in the State of Wisconsin for the past 20 years.

Wyandotte Chemicals Adds to Service Forces

Stephen O. Johnson and Robert K. Tucker are new additions to Wyandotte Chemicals Industrial Department service forces in the company's Cleveland and Chicago territories. Both new representatives were given intensive training by the Technical Service Department at the home office laboratories at Wyandotte, Michigan, as well as "refresher" courses in several sales territories.

Mr. Johnson studied at the University of Michigan and graduated as a chemical engineer from Tri-State College of Indiana. He joined the Wyandotte Chemicals Research Department early in 1942. At the close of the war activities, he was assigned to the Inorganic Section of the department and assisted in the preliminary studies which lead to the development of Wyandotte Zorball—an all-purpose floor absorbent.

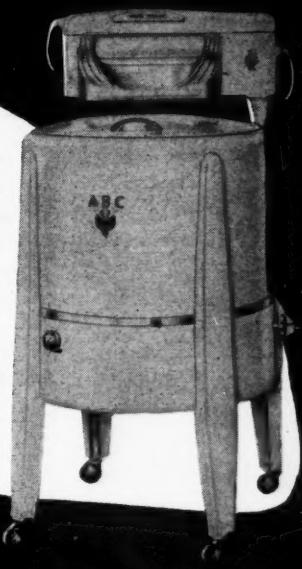
(Left) Stephen O. Johnson (Right) Robert K. Tucker

Mr. Tucker is a graduate in chemistry from Albion College of Michigan. He completed his studies following 3½ years in the U. S. Army which finally led to occupation duty in Tokyo.

that aid appearance and utility

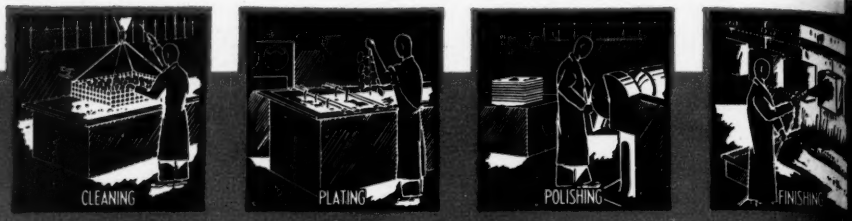
Chrome plate and rustproof finish are outstanding features of this lightweight 1/4-inch portable electric drill.

(Photo courtesy Portable Electric Tools, Inc., Chicago 20, Ill.)



Provided with an exterior finish of Hi-Bake white enamel, this round-tub washer includes a porcelain enameled tub, aluminum agitators, nickel-plated control levers, and a chrome-plated zinc band between the tub and the skirt.

(Photo courtesy Altorfer Bros. Co., Peoria, Ill.)



New Equipment and Material

Periodic Reverse Current Electroplating

A process of electroplating which is said to provide for economy, as well as an electrodeposit of unusual smoothness, maximum density, and minimum porosity, is announced by the Hanson-Van Winkle-Munning Co., Matawan, N. J. An engineering development of the Westinghouse Electric Corporation, the process involves a unique periodic reverse plating cycle in which the plating current is reversed briefly at short periodic intervals.

It is claimed that excellent results may be obtained with high speed copper cyanide baths using a 5-second plating to 1-second deplating cycle. However, commercial practice has shown that a 20-4-second cycle, as well as cycles intermediate between this and the 5-1-second cycles, is quite satisfactory. The PR Process, it is claimed, has also been found to have advantages when applied to the H-VW-M amine copper process to the extent that higher current densities may be used and improved deposits may be obtained. In addition, the process has been found applicable to acid baths.

Equipment available at the present time for using the PR Process consists of an electronic time-contactor unit capable of handling up to 50 amperes with a range of a fraction of a second to 25 seconds for each portion (anodic and cathodic) of the time cycle. Other controllers designed to handle 1,000 amperes or more are in the development stage and will be made available soon.

Torit Abrasive Belt Hood

The development of a hood for abrasive belts used with polishing lathes and backstand idlers is announced by the Torit Manufacturing Co., 314 Walnut St., St. Paul 2, Minn. The hood is available in designs for the right or left-hand side of a polishing lathe and is of hinged construction to allow for belt installation and/or removal. The design includes a 5-inch exhaust connection.

The Torit Abrasive Belt Hood

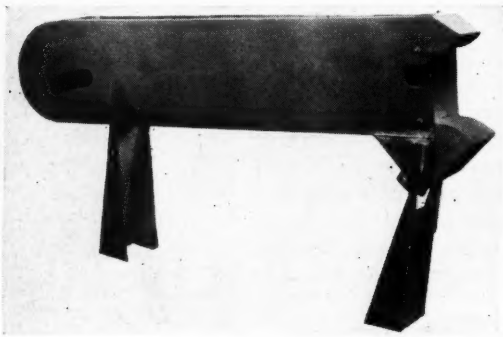


Fig. 1—Torit Abrasive Belt Hood for polishing lathes and backstand idlers

Filter All Plating Solutions Faster, More Completely in

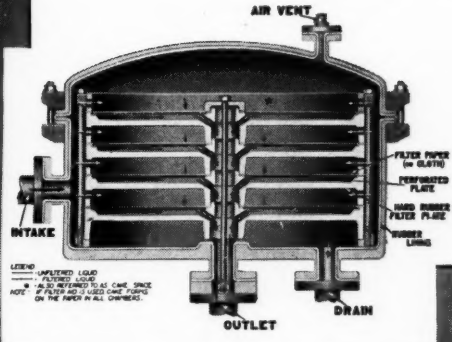
SPARKLER
Horizontal Plate
FILTERS

Because the filter cake is held horizontally, it is absolutely stable to the end of each filtering cycle. And cycles are longer because the cake retains its porosity longer. That is why the "horizontal principle," as embodied in Sparkler filters, gives you more efficient, low cost, operation. Sparkler filters are pressure-tight and leak-proof, designed for intermittent or continuous operation.

4 Plating Solution Types

1. Rubber-lined for bright nickel
2. Stainless steel for acids
3. All Iron for alkaline solutions
4. All Steel (with Stainless Pump) for chromium

SPARKLER MANUFACTURING CO.
Mundelein, Illinois



Made in Capacities
60 to 10,000 G.P.H.

See your supplier or Write for details

Our Engineering Service is available for any specialized problems.

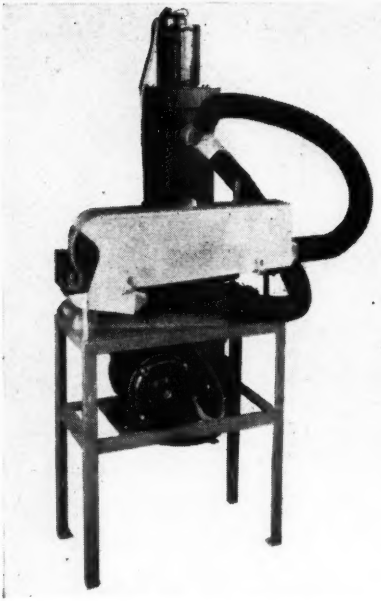


Fig. 2—Torit Abrasive Belt Hood for bench grinder and backstand idler

shown in Fig. 1 is designed for a 14-foot belt, 16-inch contact wheel, and 12-inch idler pulley and is adjustable for a 36 or 40-inch spindle height. The company has also developed an abrasive belt hood for use with bench grinders and backstand idlers which includes two 3-inch diameter exhaust outlets that are connected with 3-inch duck-covered hose to a dust separator, as shown in Fig. 2.

Acme Grade 4-L-10 Liquid Composition

The Hanson-Van Winkle-Munning Co., Matawan, N. J., announces the development of a liquid coloring composition for coloring nickel, brass, copper, aluminum, and zinc die castings. Designated as Acme Grade 4-L-10, the composition, it is claimed, cleans up beautifully on the work, leaves the face of the buff soft and clear, and does not clog fluid lines.

Acme Grade 4-L-10 Liquid Coloring Composition is recommended for use with pressure type spray equipment.

Schauer Type NA2B-V Speed Lathe

Designed to provide a unique method for polishing and finishing stainless steel, copper and aluminum bowls, discs, plates, reflectors, and so on, the Schauer Type NA2B-V Speed Lathe illustrated herewith, product of the Schauer Machine Co., 2060 Reading Rd., Cincinnati 2, Ohio, utilizes a vacuum-type holding fixture which is said to make possible the fast polishing of the entire surface of the object with an evenness of luster.

With the machine, the part to be polished is held in the fixture by a vacuum and is revolved. Various types and sizes of vacuum holding fixtures may be provided, depending upon the size and shape of the parts to be finished. The design of the fixture is said to eliminate the possibility of marring or distorting the workpiece, even though the latter may be of a very thin nature.

The Schauer Type NA2B-V Speed Lathe may be equipped for either hand or foot operation of the motor and brake control. The brake is applied automatically the instant the power supply to the motor is cut off. The braking action is said to be smooth, stopping the motor quickly at high speed—a factor which contributes to a high rate of production.

Schauer Type NA2B-V Speed Lathe

ow! Zapon Duranite-H .A Really New Finish!

TESTS TO DATE SHOW THE LLOWING OPERTIES:

Superior soap resistance, still going after 1080 hours in 3% Gold Dust at 120° F.

Superior humidity resistance, still going after 1608 hours, 120° F. saturated.

Superior salt spray resistance, still going after 1250 hours, 20% sodium chloride at 95° F.

Superior hardness, 5H to 6H pencil test.

Superior acid resistance, no effect from acetic, citric, oleic, lactic acids.

Superior grease resistance, no effect from vegetable, animal, petroleum greases.

HE DURANITE family of tough, fast-baking fin- ishes has served the metal-finishing industry distinction for a dozen years. It was among very first in the field to provide faster pro- ion properties combined with the abrasion chemical resistance so necessary in modern l finishing.

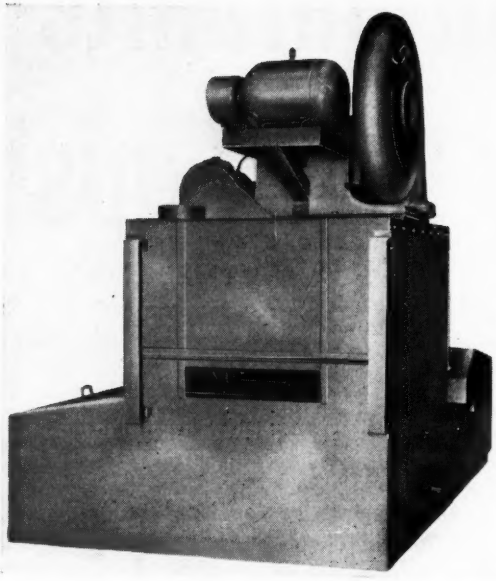
w we offer another member — Duranite-H — e from an entirely new resin base which pro- s the new, highly desirable properties shown above. Let us show you how Duranite-H will improve your finishing.

Write, wire or phone for quick service. Zapon Division, Atlas Powder Company, New York City, Stamford, Conn., and North Chicago, Ill.

ZAPON

REG. U. S. PAT. OFF.

zapon production finishes



Cincinnati Cylinder Block Washer

Cincinnati Cylinder Block Washer

The Cincinnati Cleaning & Finishing Machinery Co., Ironton, Ohio, has designed a cylinder block washer for the use of the automotive and aviation trades. On the right in the accompanying illustration is shown the design of cylinder block which the machine is constructed to handle.

In operation, the block is fed into the machine from a roller conveyor and is manually clamped into position by a quick-acting mechanism. A push button is then pressed, thereby automatically lowering the doors of the machine, and the block begins to revolve in the unit. At the same time, a pump is put into operation and sprays the block with cleaning solution. After a preset time interval, the pump ceases operating, the block drains, and a high pressure blower commences to remove excess water from the block. After a preset time interval, the blower ceases to operate, the block is revolved to the correct position and then stopped by means of a plugging switch. Following this, the doors of the machine automatically raise, and the cycle is completed.

GOLD PLATING SOLUTIONS

In All Colors

Guaranteed 100% Pure Gold Content
Troy Weight - Color Constant
Tarnish Resistant

Proven Quality by the Acid Test

Write or call our experts about your plating problems

Davis-K-Products Co.

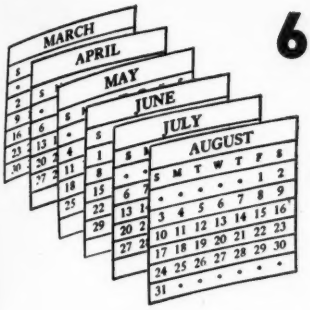
54 West 22nd St., New York 10, N. Y.
Oregon 4-4108
4-4109

Enthone "Hydrex" Water Displacing Liquid

Enthone, Inc., Dept. PF, 442 Elm St., New Haven 2, Conn., announces the development of a water displacing liquid for drying metals, to be known as "Hydrex." The product is a thin mobile liquid that is designed to shed water from metals, and has a very high penetrating power which enables it to displace water from blind holes and crevices. After the water has been displaced, the work is removed from the liquid and the solvent evaporates, leaving a water-free surface with some rust-inhibiting properties.

Hydrex is recommended for the drying of plated work to prevent staining, such as chromium plate, silver plate, or cadmium. Spots that normally remain on the work from solids dissolved in the water, such as chromic acid, or from the normal solids present in hard water are said to be removed. The water separates to the bottom of the liquid and can be drawn off periodically.

Hydrex is said to be particularly useful for drying jewelry containing many recesses. Silver plated work can be dried without spotting using the water displacing liquid followed by a vapor degreaser. Hydrex can also be used for the drying of steel after pickling and is said to be particularly applicable for drying in the presence of high humidity when rusting occurs.



6 MONTHS PROOF . . . THE NEW SIEFEN BUFFING NU-SPRA-GLU

NOW BETTER THAN EVER . . . !

This liquid buffing compound

★ DOES NOT CAUSE FIRES ★ DOES NOT CLOG SPRAY GUN ★ BETTER CUT ★ BETTER COLOR

In March, 1947 the J. J. Siefen Company introduced their ***NEW*** BUFFING NU-SPRA-GLU and six months exhaustive tests have proven that this new compound is better and safer in every way. For the best possible buffing job, the new compound should be used in Siefen made spray guns. The Siefen gun was designed specially to spray compounds and its use in conjunction with ***NEW*** BUFFING NU-SPRA-GLU assures continuous production with fewest work stoppages.

NEW

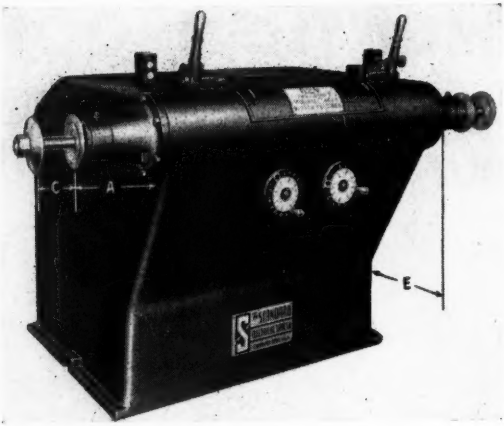
The Siefen spray gun is specially designed for use with the ***NEW*** Siefen Buffing Nu-Spra-Glu.

. . . *AND REMEMBER*

NUGLU is a liquid cold glue for setting up polishing wheels.

J. J. SIEFEN COMPANY

5633 LAUDERDALE • DETROIT 9, MICH.



Standard Type R2V Buffing and Polishing Machine

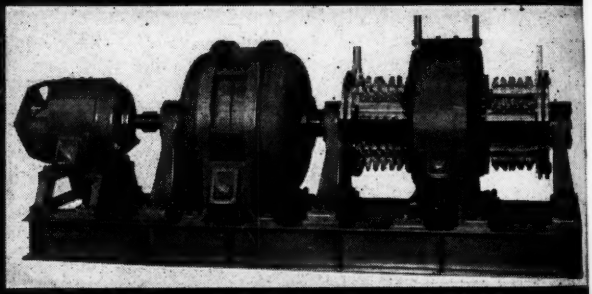
Standard Type R2V Buffing and Polishing Machine

The Standard Electrical Tool Co., 2487 River Road, Cincinnati 4, Ohio, announces that its Type R2V infinitely variable speed buffing and polishing machine formerly confined to two 5 h.p. or two 7½ h.p. motors is available with two 3 h.p. or two 10 h.p. motors. Each side of the Type R2V has its own spindle which is individually operated, thus permitting each workman to be independent of the other. The equipment on each side of the machine consists of a ball bearing motor, magnetic starter, push-button station, hand brake with coincidental switch for stopping the spindle and shutting off the current, and two "Speedial" controls.

Compactly constructed, the machine includes a base measuring 32 x 30 inches. The "E" dimension shown in the accompanying illustration provides for a 13-inch overhanging type of base. Turning of the Speedial control provides for instant changing of the spindle speed, speed changes being simultaneously recorded on the dial. The machine has a speed range of from 1,500 to 3,000 r.p.m., with the correct speed being instantly available for buffing, polishing, etc.

COLUMBIA MOTOR GENERATORS

for Electroplating and other Electrolytic Processes



Columbia Generators embody every feature essential for dependable, 24-hour operation. They are built for electroplating service in sizes of 6 to 20 volts, 500 to 20,000 amperes, for anodic treatment of aluminum in sizes of 40, 50, and 60 volts, 500 to 3,000 amperes. Columbia Generators for other electrolytic processes range from ½ to 250 KW, 100 to 40,000 amperes, 6 to 60 volts. Write for full information.

COLUMBIA ELECTRIC MFG. CO.
4519 HAMILTON AVE., N.E. CLEVELAND 14, OHIO

In one, easily applied operation

CLAREMONT FLOCK

transforms jigged-out platforms into quality-finished display trays, instrument cases, jewelry bins, etc.

Items shown, by courtesy of the G. I. Flocking 124 W. 21 St. New York

SAVE WORK

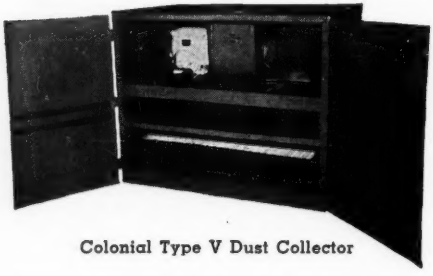
SAVE MONEY.. *Use Claremont Flock*

18 color choice. Cotton Rayon Wool qualities in stock. Write for color card and complete details. Samples available for experimental tests. Country's largest manufacturer of flock, stands ready to serve you. Inquires invited!

CLAREMONT WASTE MFG. CO. Claremont, N. H.

Colonial Type V Dust Collector

Product of the Colonial Blower Co., 17 Francis Ave., Hartford, Conn., the Colonial Type V Dust Collector illustrated



Colonial Type V Dust Collector

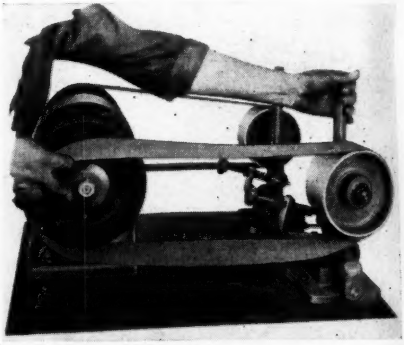
herewith is a completely self-contained unit with hinged doors for the easy cleaning or changing of filters. Two handles are provided for the quick and easy opening of the doors.

Designed to handle dust and lint resulting from buffing and polishing operations, the unit is sturdily built of heavy gauge steel on an angle iron framing and is available in four sizes with capacities of 400, 800, 1,200, and 1,600 c.f.m. With the collector, heat loss is said to be reduced to a minimum since the cleaned air is returned to the room. Depending on the size, the unit occupies a floor space of 24 x 22 x to 24 x 42 inches and weighs from 200 to 325 pounds.

Hammond No. 52 Bench Backstand

Identified as the No. 52, a bench backstand which is designed to convert existing wheel bench grinders into high production abrasive belt units for fast, efficient grinding, deburring, and finishing operations is announced by Hammond Machinery Builders, Inc., Dept. GP-25, 1622 Douglas Ave., Kalamazoo 54, Mich. Since grinding wear is on the abrasive belt and not on the supporting contact wheel, the contact wheel is said to remain true with square corners and to maintain its diameter and balance. The abrasive belt is claimed to cut coolly since a minimum of pressure is applied while grinding and the grinding is performed over an unusually large abrasive area. The resiliency of the contact wheel eliminates work chatter and operator fatigue, it is stated.

The design of the Hammond No. 52 Bench Backstand includes a heavy cast iron base drilled for wood or metal bench installation, and a dynamically balanced aluminum 6-inch diameter x 3½-inch face pulley. High quality, sealed, lifetime-lubricated precision ball bearings are employed. The construction of the



Hammond No. 52 Bench Backstand being used with standard bench grinder

unit also includes a convenient tension release lever for quick and easy belt changes; spring loaded belt tension adjustment operated by a hand screw knob; and hand screw-operated positive belt tracking adjustment. The backstand is available for left or right-hand operation.

ALLWOOD

"Vienna Brand" Lime

Made from Limestone that is identical in chemical analysis and geological structure with European Imported Lime. Tests show a "lime cake" made from Allwood "Vienna Brand" Lime equals the finish made from imported lime.

WRITE FOR FULL PARTICULARS

ALLWOOD LIME COMPANY

Manitowoc • Wisconsin

Nozzles for Shelburne Spray Guns

New types of spray nozzles that are designed to handle many kinds of com-

*CHEMICALS to clean and prepare metal for painting

Sol-Klean.... PHOSPHORIC ACID METAL CONDITIONERS

Prezaint .... MAKES PAINT STICK TO ZINC AND GALVANIZED

Industrosolv. SOLVENT EMULSIONS FOR SPRAY WASHING MACHINES

Phosmul..... SOLVENT EMULSIONS CONTAINING PHOSPHORIC ACID

Industro .... ALKALI CLEANERS AND AIR WASH COMPOUNDS

Sep-Cote .... SPRAY BOOTH COATINGS

**Write for informative literature.*

SOL-KLEAN is used to prepare steel and aluminum for painting. Rust, oxide and oil are removed and corrosion producing agents are neutralized by it. Also, Sol-Klean etches the metal and gives it a thin phospate coating.

For use one volume of Sol-Klean is diluted with 2 or 3 volumes of water. The resulting solution is usually brushed on the metal at room temperature. It adheres to the oily surface, penetrates the oil and mixes with it, and dissolves the rust. Then the Sol-Klean is removed together with the dissolved oil and rust by wiping with rags or flushing with water.

Metal may also be cleaned and treated by immersing it in hot Sol-Klean and rinsing it in water. Sol-Klean is non-inflammable and no noxious or corrosive fumes are evolved.

Sol-Klean is easy to use and can be made an integral part of your production line.

Metal treating and cleaning chemicals for 25 years

INDUSTRIAL CHEMICAL PRODUCTS CO.

3779 BELLEVUE AVE. **DETROIT 7, MICH.**

Representatives in principal midwestern cities

Shelburne Model No. 8 Pole Gun equipped with new type spray nozzle for handling heavy spraying materials

pounds from shingle stain to asbestos fibered aluminum paint are now available for the Model 45-J hand spray gun and the Model No. 8 pole gun manufactured by the A. Shelburne Co., 739 Ceres Ave., Los Angeles, Calif. Interchangeable in a matter of seconds from the pole gun to the hand gun, the nozzles enable these guns to handle fiber impregnated compounds, delivering an even free-flow of material without clogging.

The openings of the nozzles are round in cross section yet are said to deliver a fan-shaped spray that is evenly distributed over a wide oval without the use of side wings, providing for maximum square feet coverage per gallon of material and, at the same time, minimizing overspray, thereby virtually eliminating damage to nearby objects.

Ferro "Hammeroc" Finish

Known as "Hammeroc," a one-coat finish featuring long-wearing and mar-resistant qualities is announced by the Liquid Plastics Div., Ferro Enamel Corp., 2150 E. 56th St., Cleveland 5, Ohio. Physically, the finish is a high quality synthetic enamel of the alkyd, alkyd-urea, and alkyd-urea-melamine type.

According to the manufacturer, Hammeroc provides a distinctive finish on products in a single spray application, no splatter coat or thinner being necessary. The finish is claimed to he highly resistant to soap, alkali, and moisture and is said to be easy to keep clean and sanitary. Hammeroc is available in a wide variety of pastel hues, all of which are claimed to provide excellent coverage and hiding properties.

THE VARNISH PRODUCTS CO.

MAKERS OF

CEL-U-LAK Lacquers and Enamels

FORM-A-ROC—alkyd-amine enamels

ALSO

Bronzing vehicles, adhesives and other specialties for the industrial finishing of wood, metal, ceramics and plastics.

5206 HARVARD AVENUE
CLEVELAND, OHIO

WE RECOVER YOUR
SOLVENTS and THINNERS
from Sludge, Waste, Wash, Spoiled Lacquers, etc.
AND SAVE YOU MONEY

Each shipment—one drum or a carload—receives PROPER and SEPARATE TREATMENT.
Solvents recovered by the Lofgren Process.
Write to:

SOLVENTS RECOVERY SERVICE, Inc.
1019 Broad St. or Newark, N. J.
HAMMOND SOLVENTS RECOVERY SERVICE, Inc.
241 Brunswick St. Hammond, Ind.

CUT FINISHING COSTS 7 WAYS

USING

SEYMOUR BRIGHT NICKEL PROCESSES

Seymour Bright Nickel Processes, "C", "NC", or "CK", added to standard Watts baths, will effect these savings.

1. Deposited nickel plate requires no further finishing before chromium plating. Chrome deposits easier over bright nickel than over buffed nickel.

2. With no finishing required, or nickel buffed off, plate may be safely built up to specifications.

3. Base metals, except zinc base alloys, having acceptable finish may be bright nickel plated ***directly***. No buffing is required after nickel plating.

4. Bright nickel plates directly on fine grained copper deposits, secured by deposition or coloring.

5. Excellent throwing power due to operation at a pH to 4.5 Electrometric. Plates deep recesses.

6. Perfect adherence to properly cleaned base metals even with very thin deposits.

7. Seymour bright nickel plated articles are often chromium plated without removal from original rack.

NICKEL ANODES • NICKEL SILVER • PHOSPHOR BRONZE

THE SEYMOUR MANUFACTURING COMPANY • SEYMOUR, CONNECTICUT

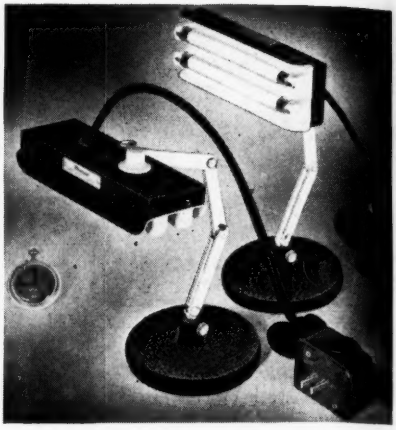
Nonferrous Alloys Since 1878

SEYMOUR

Stocker and Yale Miniature Fluorescent General Utility Lamp

Designed to provide a cool light of high intensity from a small source and adapted for use on standard and special purpose machines, a miniature fluorescent lamp which is also intended for bench use where close work is being performed and where a small adjustable position lamp having very little radiation is essential is now being marketed by Stocker & Yale, 48 Birch St., Marblehead, Mass. The lamp is said to produce a light intensity of 550 foot-candles at a 3-inch working distance and a color temperature of 3,500 deg. Kelvin. This intense illumination converging on the subject from widely divergent angles floodlights the subject, thereby minimizing objectionable bright spots and reflections.

A normal operating temperature of 115 deg. F. permits close work without the objection of radiant heat and hot surfaces. Operation is limited to 115 volts, 60-cycle a.c. Starting is accomplished by twisting the starter knob on the lamp after the plug-in type ballast reactor at the end of the 6-foot lamp cord is plugged into a standard type electrical outlet.



Stocker & Yale Miniature Fluorescent General Utility Lamps

The Stocker & Yale Miniature Fluorescent General Utility Lamp utilizes twin 4-watt bulbs of standard manufacture, rated at 2,500 hours normal life, and has a baked black wrinkle exterior finish and a baked white enamel reflector. Although normally supplied with a supporting bracket and cast base, the lamp may be obtained without these surplus where direct attachment to machines is desired.

FOR TOP PERFORMANCE

Klarifiant

IN WATER CURTAIN

SPRAY BOOTH

OPERATION

• • •

Reduces

LABOR COST

Eliminating

PLUGGED NOZZLES • WATER BREAKS
SCALE CLOGGED LINES
SLUDGE IN RESERVOIR
LOSS OF PRESSURE

•

FOR DETAILS WRITE

The Du Bois Company

CINCINNATI 3 OHIO

Clarke Duo Sander and Polisher

A powerful sander and polisher which can be used on metal, wood, or plastics, to be known as the Clarke Duo, is now being distributed by Diamond-Detroit, Inc., 8-270 General Motors Bldg., Detroit 2, Mich. The unit, which has a 115-volt motor that can be used on either alter-

NALCO INFRA RED LAMPS

Made Especially for Industrial Use

Not "all purpose" lamps, NALCO Infra-Reds are especially designed for industrial drying and baking. Engineered for production use, they are instantly responsive. Long lasting carbon filament — sealed reinforced base.

Send for "Drying Problems Made Easy"

North American Elec. Lamp Co.
1020 Tyler St. St. Louis 6, Mo.

Clarke Duo Sander and Polisher

nating or direct current, weighs 4 lb. and is equipped with an easy-grip handle having a convenient trigger switch.

The Clarke Duo Sander and Polisher is supplied complete with a 10-foot rubber-covered extension cord and 5-inch rubber disc which rotates at 3,000 r.p.m. with normal load and at 5,000 r.p.m. when free. Constructed with precision sealed ball bearings, the tool can be furnished with various accessories, including 3 or 5-inch sandpaper discs in fine, medium and coarse grits, 5-inch lamb's wool buffer, and 3-inch rubber discs.

Pittsburgh Alkali-Resistant Enamel

An alkali-resistant enamel for use on industrial machinery where cutting compounds and oils saponify regular paints has been developed by the Paint Division, Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh 22, Pa. Designed for applications where alkaline conditions cause regular machinery finishes to lose color, become brittle, and generally deteriorate, the enamel employs a properly plasticized rubber base vehicle which is said to provide for satisfactory adhesion and flexibility of the enamel. A special green pigment that is said to be unaffected by alkali gives the enamel a Vista Green color.

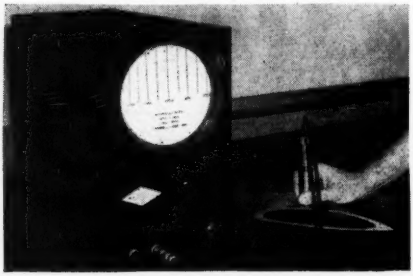
Pittsburgh Alkali - Resistant Enamel is recommended for abnormal applications in most conditions of alkali up to 10 per cent. "Soakers" and washing machines in bottling plants, valve and crankshaft grinders, and lathes are typical equipment to which the enamel is said to be readily applicable.

Sperry Reflectogage

The Reflectogage, an instrument utilizing supersonics for thickness measurement and flaw detection, is now being manufactured by Sperry Products, Inc., 15th St. and Willow Ave., Hoboken, N. J. With the instrument, the thickness of metals and other materials can be measured where access from only one side is available. Maximum error in measurement is said to be less than 2 per cent of the thickness of the material. The thickness of tubing and flat parts between 0.005 and 0.300 inch can be read directly from the face of the oscilloscope screen. Indirect reading of the thickness of parts up to 4 inches can be accomplished with slight calculation.

In operation, a quartz crystal searching unit is applied to the oiled surface of the material and the oscilloscope pattern observed by the operator. A vertical

deflection of the oscilloscope trace indicates resonance of the sound beam within the material. The position of the vertical deflection along the horizontal axis is determined by the resonant frequency and is thus related to thickness. When thin pieces are being tested, this



Sperry Reflectogage in use

thickness is read directly from the superimposed calibrated screen. A different screen is used for each type of material and for each of four thickness ranges.

The Reflectogage is likewise readily adaptable for the production-line testing of thin pieces, or bonded or clad materials, for internal defects or separations.

"Unisol Liquid" Paint Stripper

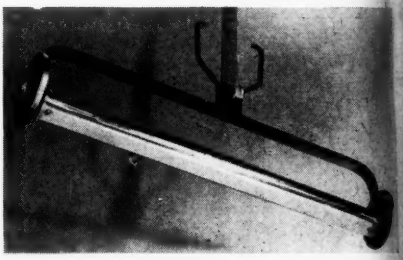
The Chemco Products Co., Inc., Chicago, Ill., is now distributing a product known as "Unisol Liquid" for stripping enameled and painted wood or metal parts. Designed to provide a fast-acting non-toxic stripping and cleansing medium, the non-inflammable solution is said to leave any painted or enameled part completely cleaned and ready for repainting after five minutes' immersion time in the solution.

According to the manufacturer, Unisol Liquid will not harm operators' hands or clothing and will not react on or affect any ferrous or non-ferrous metal, glass, or wood. Moreover, the stripper, it is claimed, does not lose its strength and can be reused by merely filtering the paint film from the tank containing the solution. The product is supplied ready for use, with no heating required, has no obnoxious fumes, and will not rust parts, the manufacturer states.

Tennant Floor Magnet

To allow for the instant pickup of contaminating ferrous dust, chips, shavings, and allied material from finishing department floors, the G. H. Tennant Co., 2530 N. Second St., Minneapolis 11, Minn., has developed an 18-inch wheel-mounted floor magnet. Built for easy one-hand operation, the unit contains nine large Alnico magnets encased in a seamless aluminum tube. The cast aluminum wheels are located low enough so that the unit can be rolled under benches, tables, machines, in spray booths, around dip tanks, in sandblasting and tack-rag areas, etc.

The principal advantages claimed for the Tennant Floor Magnet are that it reduces contamination of porcelain or enamel surfaces; improves safety for workers; simplifies floor maintenance; and allows for easy recovery of ferrous assembly parts such as bolts, screws, nails, and



Tennant Floor Magnet

clamps. The unit is supplied complete with a detachable 4-foot handle, steel keeper plate, and full instructions. Mounting connections are provided to enable the magnet to be fastened to the back of any standard Tennant floor machine.

For a real good polishing job use

Keystone TURKISH Emery

FRESH SUPPLY AVAILABLE

KEYSTONE EMERY MILLS *Write for Sample* **4316 Paul St., Phila., Pa.**